

DC motors



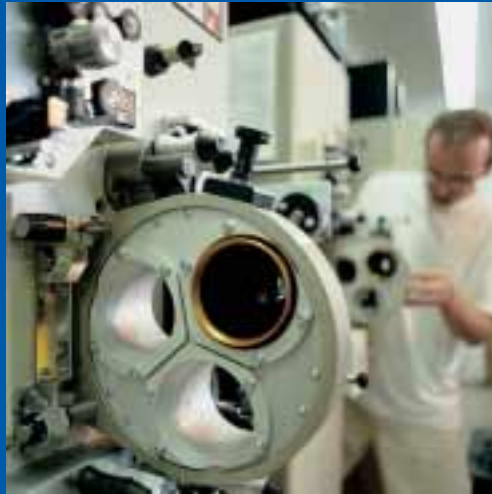
G-motion



No matter which drive solution you imagine, we make your dreams come true.

True to our slogan (one stop shopping) we offer you a complete programme of electronic and mechanical drive systems which is distinguished by reliability and efficiency.

The scope of our programme includes frequency inverters, servo controllers, variable-speed drives, speed reduction gearboxes, motors, brakes, clutches, decentralised I/O and operator and display units.



Many well-known companies use Lenze products in various applications.

DC motors | compact with high power reserves

Lenze DC motors characteristically offer high performance together with exceptionally smooth running characteristics across a wide speed and torque setting range. They can be controlled with exceptional accuracy using our cost-effective DC speed controllers, and achieve speed control ranges > 1:1000 even in reversing duty – as well as with high starting currents – when used for example as a winder.

Reliable low-noise cooling systems and correspondingly designed commutation systems offer the ideal basis for the high power reserves

which are required, for example, in dynamic positioning applications. The DC motors in the power band up to 90 kW and above are available as a modular system with various enclosures. Depending on the application, these motors can be combined with the optimum gearboxes, brakes or feedback systems. The design of the motors ensures long service life with minimal maintenance requirements and therefore represents an efficient and cost-effective choice of drive.



Lenze | An introduction

Lenze is the competent partner for your application. Lenze is not only a supplier for single components but also offers solutions for complete drive systems including planning, execution and commissioning.

Furthermore, a worldwide service and distribution network lets you engage a qualified customer advisory service and an after sales service that is fast and extensive.

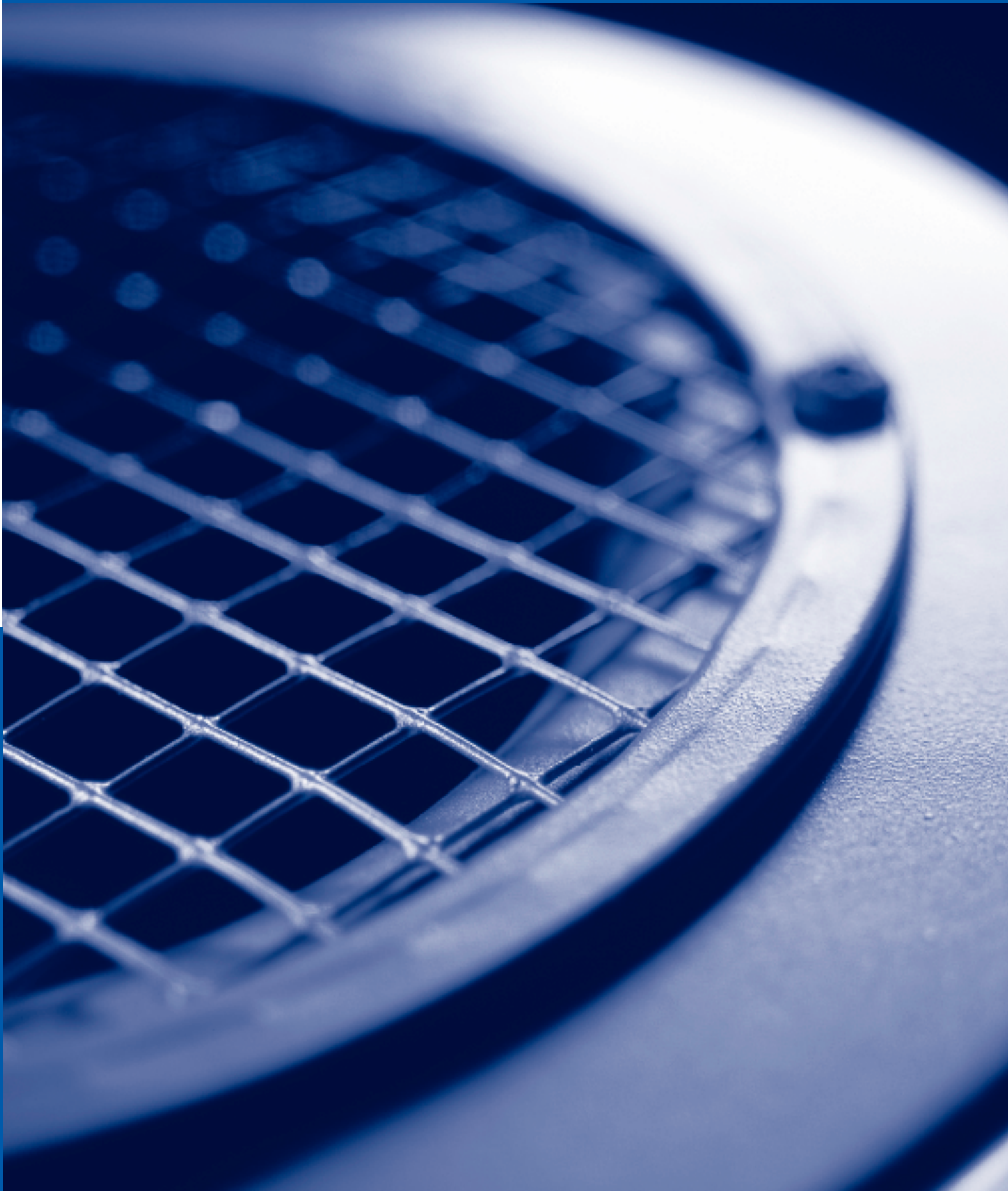
Our quality assurance system for design, production, sales and service is certified according to DIN ISO 9001 : 2000. Our environmental management system is also certified to DIN EN ISO 14001.

Our customers set the standards for measuring the quality of our products. Our task is to meet your requirements, since customer orientation is a Lenze principle demanding the best quality.

See for yourself.



A worldwide service –
Our team of experts provides reliable and professional assistance.



Contents | DC motors

Motor features

| | |
|--------------------------|---|
| MGFRK/MGFQU/MGFQK series | 8 |
|--------------------------|---|

DC motors IP54, IP55

| | |
|------------------------------------|----|
| Technical Information MGFRK series | 11 |
| Technical data MGFRK series | 12 |
| Dimensions MGFRK series | 17 |

DC motors IP23s, IP43s, IPR44

| | |
|--|----|
| Technical Information MGFQU/MGFQK series | 21 |
| Technical data MGFQU series | 22 |
| Technical data MGFQK series | 28 |
| Dimensions MGFQU/MGFQK series | 32 |

Lenze worldwide

| | |
|--|----|
| | 36 |
|--|----|

MGFRK/MGFQU/MGFQK series

Insulation and impregnation

All motors are of temperature class F (permissible permanent temperature 155 °C) and are provided with a special impregnation of the windings.

Temperature monitoring

A normally closed bimetal switch that reacts at 155 °C is fitted as standard to all motors of the MGFRK, MGFQU and MGFQK series. Thermistors may also be fitted. This does, however, not ensure thermistor-type motor protection. Air flow monitors may be fitted to external radial blowers of the MGFQU and MGFQK series.

Fitting brakes and actual value encoders

On request, we can fit Lenze spring-operated brakes. As a standard we can also fit the following tachogenerators:

- ▶ Three-phase AC hollow shaft tachogenerator TD 3-30 V/1000 min-1;
- ▶ DC hollow shaft tachogenerator GT (GTF) 7.08 L/420 - 20 V/1000 min-1;
- ▶ Resolver
- ▶ Hollow shaft pulse encoder ITD 21

Ambient temperature T_K and the influence on the rated power

Without special measures, temperatures between -20 °C and +40 °C are permissible.

| T_K (°C) | 30 | 40 | 45 | 50 | 55 | 60 |
|----------------------|-----|-----|----|----|----|----|
| P/P _N (%) | 117 | 100 | 95 | 90 | 83 | 77 |

for MGFQK 160 / MGFQU 160

| T_K (°C) | 25 | 40 | 45 | 50 | 55 | 60 |
|----------------------|-----|----|----|----|----|----|
| P/P _N (%) | 100 | 83 | 78 | 74 | 68 | 64 |

Influence of the altitude h on the rated power

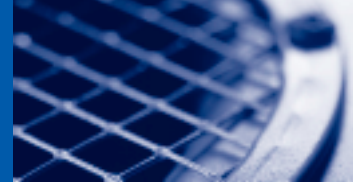
| h (amsl) | 1000 | 2000 | 3000 | 4000 | 5000 |
|----------------------|------|------|------|------|------|
| P/P _N (%) | 100 | 92 | 83 | 77 | 67 |

Rated powers

The rated powers shown in the table are based on a form factor $FF = 1.05$.

For higher form factors, the output must be reduced. If a standard separately driven fan is fitted, a constant torque may be obtained to almost standstill. The maximum permissible load period under rated current during standstill is 30 s for the MGFRK series and 10 s for the MGFQU/MGFQK series.





MGFRK/MGFQU/MGFQK series

Field weakening

A field weakening range of 1:3 for MGFRK and MGFQK motors, and of 1:1.2–1:1.5 for MGFQU motors is generally possible with constant power. For mechanical reasons, however, the overspeed test speed must not be exceeded. Special designs for higher speeds and field weakening ranges can be provided.

Radio interference suppression

Radio interference suppression of the machine is almost ensured due to the symmetrically arranged auxiliary commutator windings and the spark-free commutation. Special measures can be taken to meet higher requirements.

Balancing

Balancing is done by half keys to DIN/ISO 8821 to vibration level "N" according to VDE 0530 T14. Level "S" is possible on request. The shaft end and the key correspond to DIN 748 and IEC recommendation 72.

Noise level

The noise level L_A , as per DIN 45635 rating curve A, is below the admissible noise level as per DIN 57530/VDE 0530.

Overload capacity

Over a range of up to 3 times the nominal current, the motors of the MGFRK and MGFQK series provided with a compensating winding keep to exact proportionality between current and torque. In this range, overload is always possible if the effective value of the overall current is not exceeded. Motors of the MGFQU series can provide 1.6 times the nominal torque for approx. 20 s. The current then increases to approximately $2 \times I_N$.

Terminal box position

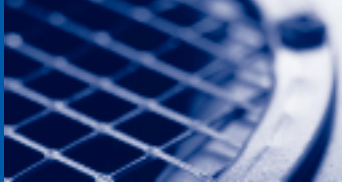
The standard terminal box position is "right" for the MGFRK series; "top" for the MGFQU and MGFQK series for the sizes 063-32 to 132-32, and "right" for the sizes 160-22 when viewed from the output shaft end.

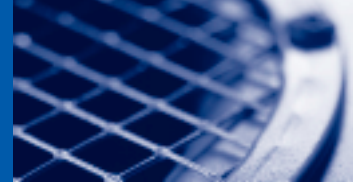
Mountings

Standard for the MGFRK series are mountings IMB 3, IMB 5 and IMB 14, for the MGFQU and MGFQK series mountings IMB 35 or IMB 34 to DIN IEC 34 T7. Other mountings are possible. The ball bearings are rated for at least 20,000 operating hours under nominal load conditions. In the basic design, the motors are equipped with permanently greased ball bearings. For high radial shaft loads, cylindrical roller bearings are provided on the output side.

Pg screwings

| Motor type | Motor terminal box | | Fan terminal box | |
|--|------------------------|-------------------------------|------------------------|-------------------------------|
| | Quantity and dimension | max. cable \varnothing [mm] | Quantity and dimension | max. cable \varnothing [mm] |
| MGFRK 090-22 MGFRK 100-22 MGFRK 112-22 | 2xM25 | 16 | 1xM16 | 9 |
| MGFRK 132-22 MGFRK 160-22 | 2xM40 / 2xM16 | 27 / 9 | | |
| MGFQK 063-32 MGFRU 080-22 | 2xM25 | 16 | 1xP _g 9 | 8 |
| MGFQU 100-22 MGFQK 100-32 MGFQU 112-22 | 1xM40 / 1xM20 / 1xM16 | 27 / 13 / 9 | | |
| MGFQU 132-22 | 1xM50 / 1xM20 / 1xM16 | 35 / 13 / 9 | | |
| MGFQU/MGFQK 160-22 MGFQU/MGFQK 160-32 | 4xM40 / 2xM25 | 27 / 16 | 1xP _g 16 | 15 |





MGFRK series

Technical information

The DC motors of the MGFRK series represent the most modern motor construction, including: fully laminated stators and rotors allowing high speeds of current alternation with low losses and heat generation. Four-pole design with skewed armatures and many commutator segments ensures high torque and smooth running, down to near standstill. Compensating windings ensure low field distortion and excellent spark-free commutation together with the commutating poles. This is also true for high overload current ($3 \times I_N$) and bad form factors when used with DC controllers, which ensure long life of the brushes. Mechanically, the motors consist of components for standard three-phase AC motors, enclosure IP 54.

The mounting dimensions to IEC 72 as well as DIN 42673 and DIN 42677 standards allow a direct connection with helical, worm and helical worm gearboxes of the Lenze product range and of other suppliers. The standard motor types MGFRK 090-160 are of enclosure IP 54, they are axially cooled temperature class F motors (enamelled wire quality corresponds to temperature class "H" which increases life) and have a normally closed thermal bimetal contact. Due to our modular design, many options can be provided. These comprise AC and DC tachogenerators, incremental encoders and brakes as well as combinations of these.



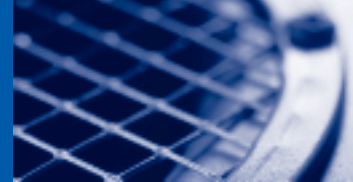
MGFRKBT 090-22 with brake and tachogenerator

MGFRK 090-22

Technical data

| | |
|---|--|
| Data refers to: – Form factor – Enclosure – Cooling (forced ventilation) – Continuous operation – Insulation class | F _F = 1.05 IP 54 IC 0541 S1 F |
| Total weight Inertia | m = 21 kg J = 0.004 kgm ² |
| Field excitation | U _F = 210 V I _F = 0.60 A U _F = 360 V I _F = 0.32 A |
| A-side bearing B-side bearing | 6205-2RSR-C3 6205-2RSR-C3 |
| Carbon brushes | a) 6.3 x 12.5 x 20 |
| Permissible shaft load for L/2 and n _N – reinforced bearing | F _r = 780 N F _a = 440 N F _{rr} = 2100 N |
| Fan variant | 220-240 V, 50-60 Hz, 0.22 A 380-460 V, 50-60 Hz, 0.12 A |
| Cooling variant | IC 0641/0741 |
| Cooling air volume Pressure drop | 75 m ³ /h 36 Pa |

| P kW | Speed n at voltage | | | | n _F | n _{Mech} | M Nm | I _{AN} A | I _{Amax} A | L _A mH | R _a 125° Ω | Carbon brushes | |
|---------|--------------------|-------|-------|-------|----------------|-------------------|---------|----------------------|------------------------|----------------------|--------------------------|----------------|---------|
| | 170 V | 280 V | 420 V | 460 V | | | | | | | | Quantity | Variant |
| 0.33 | – | 550 | – | – | 1650 | 4500 | 5.5 | 2.3 | 7 | 156.2 | 54.38 | 4 | a |
| 0.65 | – | – | 1100 | – | 3300 | 4500 | 5.5 | 2.3 | 7 | 156.2 | 54.38 | 4 | a |
| 0.7 | – | – | – | 1250 | 3750 | 4500 | 5.5 | 2.3 | 7 | 156.2 | 54.38 | 4 | a |
| 0.2 | 350 | – | – | – | 1050 | 4500 | 5.6 | 3.0 | 9 | 99.5 | 34.95 | 4 | a |
| 0.5 | – | 800 | – | – | 2400 | 4500 | 5.6 | 3.0 | 9 | 99.5 | 34.95 | 4 | a |
| 0.9 | – | – | 1500 | – | 4500 | 4500 | 5.6 | 3.0 | 9 | 99.5 | 34.95 | 4 | a |
| 1.0 | – | – | – | 1650 | 4500 | 4500 | 5.6 | 3.0 | 9 | 99.5 | 34.95 | 4 | a |
| 0.27 | 480 | – | – | – | 1450 | 4500 | 5.7 | 3.5 | 10 | 70.5 | 23.35 | 4 | a |
| 0.6 | – | 1100 | – | – | 3300 | 4500 | 5.6 | 3.5 | 10 | 70.5 | 23.35 | 4 | a |
| 1.1 | – | – | 1900 | – | 4500 | 4500 | 5.5 | 3.5 | 10 | 70.5 | 23.35 | 4 | a |
| 1.2 | – | – | – | 2100 | 4500 | 4500 | 5.5 | 3.5 | 10 | 70.5 | 23.35 | 4 | a |
| 0.4 | 650 | – | – | – | 1950 | 4500 | 5.7 | 4.4 | 13 | 46.6 | 16.05 | 4 | a |
| 0.85 | – | 1450 | – | – | 4350 | 4500 | 5.7 | 4.4 | 13 | 46.6 | 16.05 | 4 | a |
| 1.4 | – | – | 2400 | – | 4500 | 4500 | 5.6 | 4.4 | 13 | 46.6 | 16.05 | 4 | a |
| 1.6 | – | – | – | 2700 | 4500 | 4500 | 5.6 | 4.4 | 13 | 46.6 | 16.05 | 4 | a |
| 0.5 | 870 | – | – | – | 2600 | 4500 | 5.9 | 5.3 | 16 | 33.2 | 11.52 | 4 | a |
| 1.1 | – | 1800 | – | – | 4500 | 4500 | 5.8 | 5.3 | 16 | 33.2 | 11.52 | 4 | a |
| 1.8 | – | – | 2950 | – | 4500 | 4500 | 5.7 | 5.3 | 16 | 33.2 | 11.52 | 4 | a |
| 2.0 | – | – | – | 3300 | 4500 | 4500 | 5.7 | 5.3 | 16 | 33.2 | 11.52 | 4 | a |
| 1.0 | 1650 | – | – | – | 4500 | 4500 | 5.8 | 8.3 | 25 | 14.1 | 4.53 | 4 | a |
| 1.8 | – | 3050 | – | – | 4500 | 4500 | 5.7 | 8.3 | 25 | 14.1 | 4.53 | 4 | a |
| 1.9 | 3250 | – | – | – | 4500 | 4500 | 5.7 | 14.5 | 44 | 4.6 | 1.48 | 4 | a |



MGFRK 100-22

Technical data

| | |
|---|--|
| Data refers to: – Form factor – Enclosure – Cooling (forced ventilation) – Continuous operation – Insulation class | F _F = 1.05 IP 54 IC 0541 S1 F |
| Total weight Inertia | m = 28 kg J = 0.0061 kgm ² |
| Field excitation | U _F = 210 V I _F = 0.70 A U _F = 360 V I _F = 0.37 A |
| A-side bearing B-side bearing | 6306-2RSR-C3 6206-2RSR-C3 |
| Carbon brushes | a) 8 x 12.5 x 20 |
| Permissible shaft load for L/2 and n _N – reinforced bearing | F _r = 1000 N F _a = 500 N F _{rr} = 2700 N |
| Fan variant | 220-240 V, 50-60 Hz, 0.16 A 380-460 V, 50-60 Hz, 0.06 A |
| Cooling variant | IC 0641/0741 |
| Cooling air volume Pressure drop | 105 m ³ /h 41.4 Pa |

| P kW | Speed n at voltage | | | | n _F | n _{Mech} | M Nm | I _{AN} A | I _{Amax} A | L _A mH | R _a 125° Ω | Carbon brushes | |
|---------|--------------------|-------|-------|-------|----------------|-------------------|---------|----------------------|------------------------|----------------------|--------------------------|----------------|---------|
| | 170 V | 280 V | 420 V | 460 V | | | | | | | | Quantity | Variant |
| 0.5 | – | 530 | – | – | 1600 | 4500 | 8.6 | 2.8 | 9 | 143.7 | 35.09 | 4 | a |
| 0.85 | – | – | 940 | – | 2800 | 4500 | 8.6 | 2.8 | 9 | 143.7 | 35.09 | 4 | a |
| 0.95 | – | – | – | 1050 | 3150 | 4500 | 8.6 | 2.8 | 9 | 143.7 | 35.09 | 4 | a |
| 0.35 | 350 | – | – | – | 1050 | 4500 | 8.7 | 3.7 | 12 | 80.8 | 19.6 | 4 | a |
| 0.7 | – | 800 | – | – | 2400 | 4500 | 8.5 | 3.7 | 12 | 80.8 | 19.6 | 4 | a |
| 1.2 | – | – | 1400 | – | 4050 | 4500 | 8.4 | 3.7 | 12 | 80.8 | 19.6 | 4 | a |
| 1.35 | – | – | – | 1550 | 4500 | 4500 | 8.4 | 3.7 | 12 | 80.8 | 19.6 | 4 | a |
| 0.55 | 600 | – | – | – | 1800 | 4500 | 8.5 | 5.0 | 15 | 43.8 | 10.7 | 4 | a |
| 1.1 | – | 1200 | – | – | 3600 | 4500 | 8.4 | 5.0 | 15 | 43.8 | 10.7 | 4 | a |
| 1.7 | – | – | 1900 | – | 4500 | 4500 | 8.2 | 5.0 | 15 | 43.8 | 10.7 | 4 | a |
| 1.9 | – | – | – | 2150 | 4500 | 4500 | 8.2 | 5.0 | 15 | 43.8 | 10.7 | 4 | a |
| 0.7 | 800 | – | – | – | 2400 | 4500 | 8.3 | 6.0 | 18 | 29.3 | 6.91 | 4 | a |
| 1.3 | – | 1500 | – | – | 4500 | 4500 | 8.2 | 6.0 | 18 | 29.3 | 6.91 | 4 | a |
| 2.1 | – | – | 2400 | – | 4500 | 4500 | 8.1 | 6.0 | 18 | 29.3 | 6.91 | 4 | a |
| 2.3 | – | – | – | 2700 | 4500 | 4500 | 8.1 | 6.0 | 18 | 29.3 | 6.91 | 4 | a |
| 0.85 | 900 | – | – | – | 2700 | 4500 | 8.6 | 7.0 | 21 | 22.6 | 5.7 | 4 | a |
| 1.5 | – | 1700 | – | – | 4500 | 4500 | 8.4 | 7.0 | 21 | 22.6 | 5.7 | 4 | a |
| 2.4 | – | – | 2750 | – | 4500 | 4500 | 8.3 | 7.0 | 21 | 22.6 | 5.7 | 4 | a |
| 2.7 | – | – | – | 3100 | 4500 | 4500 | 8.3 | 7.0 | 21 | 22.6 | 5.7 | 4 | a |
| 1.0 | 1100 | – | – | – | 3300 | 4500 | 8.4 | 7.9 | 24 | 17.7 | 4.25 | 4 | a |
| 1.85 | – | 2100 | – | – | 4500 | 4500 | 8.4 | 7.9 | 24 | 17.7 | 4.25 | 4 | a |
| 2.9 | – | – | 3300 | – | 4500 | 4500 | 8.3 | 7.9 | 24 | 17.7 | 4.25 | 4 | a |
| 3.1 | – | – | – | 3600 | 4500 | 4500 | 8.3 | 7.9 | 24 | 17.7 | 4.25 | 4 | a |
| 1.6 | 1800 | – | – | – | 4500 | 4500 | 8.9 | 12.3 | 36 | 7.7 | 1.84 | 4 | a |
| 2.85 | – | 3200 | – | – | 4500 | 4500 | 8.6 | 12.3 | 36 | 7.7 | 1.84 | 4 | a |
| 2.7 | 3000 | – | – | – | 4500 | 4500 | 8.6 | 18.6 | 56 | 3.2 | 0.755 | 4 | a |

DC motors

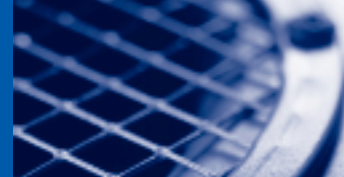
IP44, IP54, IP55

MGFRK 112-22

Technical data

| | |
|---|--|
| Data refers to: – Form factor – Enclosure – Cooling (forced ventilation) – Continuous operation – Insulation class | F _F = 1.05 IP 54 IC 0541 S1 F |
| Total weight Inertia | m = 40 kg J = 0.0142 kgm ² |
| Field excitation | U _F = 210 V I _F = 1.1 A U _F = 360 V I _F = 0.6 A |
| A-side bearing B-side bearing | 6306-2RSR-C3 6206-2RSR-C3 |
| Carbon brushes | a) 8 x 12.5 x 20 b) 8 x 10.0 x 20 |
| Permissible shaft load for L/2 and n _N – reinforced bearing | F _r = 1500 N F _a = 500 N F _{rr} = 2800 N |
| Fan variant | 220-240 V, 50-60 Hz, 0.30 A 380-460 V, 50-60 Hz, 0.15 A |
| Cooling variant | IC 0641/0741 |
| Cooling air volume Pressure drop | 150 m ³ /h 48 Pa |

| P kW | Speed n at voltage | | | | n _F | n _{Mech} | M Nm | I _{AN} A | I _{Amax} A | L _A mH | R _a 125° Ω | Carbon brushes | |
|---------|--------------------|-------|-------|-------|----------------|-------------------|---------|----------------------|------------------------|----------------------|--------------------------|----------------|---------|
| | 170 V | 280 V | 420 V | 460 V | | | | | | | | Quantity | Variant |
| 1.1 | – | – | 750 | – | 2250 | 4500 | 15.0 | 3.7 | 11 | 179.8 | 26.55 | 4 | a |
| 1.3 | – | – | – | 850 | 2550 | 4500 | 15.0 | 3.7 | 11 | 179.8 | 26.55 | 4 | a |
| 0.6 | 390 | – | – | – | 1200 | 4500 | 14.9 | 5.9 | 17 | 71.1 | 10.4 | 4 | a |
| 1.2 | – | 800 | – | – | 2400 | 4500 | 14.6 | 5.9 | 17 | 71.1 | 10.4 | 4 | a |
| 2.0 | – | – | 1300 | – | 3900 | 4500 | 14.5 | 5.9 | 17 | 71.1 | 10.4 | 4 | a |
| 2.2 | – | – | – | 1450 | 4350 | 4500 | 14.5 | 5.9 | 17 | 71.1 | 10.4 | 4 | a |
| 0.8 | 500 | – | – | – | 1500 | 4500 | 15.0 | 7.2 | 22 | 49.4 | 7.16 | 4 | a |
| 1.6 | – | 1000 | – | – | 3000 | 4500 | 14.9 | 7.2 | 22 | 49.4 | 7.16 | 4 | a |
| 2.5 | – | – | 1600 | – | 4500 | 4500 | 14.7 | 7.2 | 22 | 49.4 | 7.16 | 4 | a |
| 2.8 | – | – | – | 1800 | 4500 | 4500 | 14.6 | 7.2 | 22 | 49.4 | 7.16 | 4 | a |
| 1.1 | 700 | – | – | – | 2100 | 4500 | 15.1 | 9.0 | 27 | 31.6 | 4.72 | 4 | a |
| 2.0 | – | 1300 | – | – | 3900 | 4500 | 14.8 | 9.0 | 27 | 31.6 | 4.72 | 4 | a |
| 3.2 | – | – | 2050 | – | 4500 | 4500 | 14.7 | 9.0 | 27 | 31.6 | 4.72 | 4 | a |
| 3.5 | – | – | – | 2300 | 4500 | 4500 | 14.6 | 9.0 | 27 | 31.6 | 4.72 | 4 | a |
| 1.6 | 1000 | – | – | – | 3000 | 4500 | 15.5 | 12.4 | 38 | 17.8 | 2.55 | 4 | a |
| 2.9 | – | 1850 | – | – | 4500 | 4500 | 15.2 | 12.4 | 38 | 17.8 | 2.55 | 4 | a |
| 4.5 | – | – | 2850 | – | 4500 | 4500 | 15.0 | 12.4 | 38 | 17.8 | 2.55 | 4 | a |
| 4.9 | – | – | – | 3200 | 4500 | 4500 | 14.9 | 12.4 | 38 | 17.8 | 2.55 | 4 | a |
| 1.8 | 1150 | – | – | – | 3500 | 4500 | 15.0 | 13.6 | 41 | 14.2 | 2.0 | 4 | a |
| 3.2 | – | 2050 | – | – | 4500 | 4500 | 14.9 | 13.6 | 41 | 14.2 | 2.0 | 4 | a |
| 5.0 | – | – | 3200 | – | 4500 | 4500 | 14.7 | 13.6 | 41 | 14.2 | 2.0 | 4 | a |
| 5.5 | – | – | – | 3550 | 4500 | 4500 | 14.6 | 13.6 | 41 | 14.2 | 2.0 | 4 | a |
| 3.1 | 2000 | – | – | – | 4500 | 4500 | 14.8 | 22.0 | 66 | 5.5 | 0.55 | 8 | b |
| 5.3 | – | 3450 | – | – | 4500 | 4500 | 14.8 | 22.0 | 66 | 5.5 | 0.55 | 8 | b |



MGFRK 132-22

Technical data

| | |
|---|--|
| Data refers to: – Form factor – Enclosure – Cooling (forced ventilation) – Continuous operation – Insulation class | $F_F = 1.05$ IP 54 IC 0541 S1 F |
| Total weight Inertia | $m = 84 \text{ kg}$ $J = 0.0411 \text{ kgm}^2$ |
| Field excitation | $U_F = 210 \text{ V } I_F = 1.1 \text{ A}$ $U_F = 360 \text{ V } I_F = 0.6 \text{ A}$ |
| A-side bearing B-side bearing | 6308-2RSR-C3 6208-2RSR-C3 |
| Carbon brushes | a) $10 \times 16 \times 20$ b) $10 \times 12.5 \times 20$ |
| Permissible shaft load for $L/2$ and n_N – reinforced bearing | $F_r = 2200 \text{ N}$ $F_a = 1100 \text{ N}$ $F_{rr} = 4500 \text{ N}$ |
| Fan variant | 220-240 V, 50-60 Hz, 0.55 A 380-460 V, 50-60 Hz, 0.22 A |
| Cooling variant | IC 0641/0741 |
| Cooling air volume Pressure drop | $220 \text{ m}^3/\text{h}$ 63 Pa |

| P kW | Speed n at voltage | | | | η_F | η_{Mech} | M Nm | I_{AN} A | I_{Amax} A | L_A mH | $R_a 125^\circ$ Ω | Carbon brushes | |
|---------|--------------------|-------|-------|---|----------|----------------------|---------|---------------|-----------------|-------------|-----------------------------|-------------------|-------------------|
| | 280 V | 420 V | 460 V | | | | | | | | | min ⁻¹ | min ⁻¹ |
| 1.6 | 540 | – | – | – | 1600 | 4000 | 29.2 | 7.7 | 24 | 70.0 | 7.28 | 4 | a |
| 2.7 | – | 880 | – | – | 2650 | 4000 | 29.0 | 7.7 | 24 | 70.0 | 7.28 | 4 | a |
| 3.0 | – | – | 1000 | – | 3000 | 4000 | 29.0 | 7.7 | 24 | 70.0 | 7.28 | 4 | a |
| 3.1 | 930 | – | – | – | 2800 | 4000 | 31.5 | 13.5 | 40 | 27.3 | 2.82 | 4 | a |
| 4.9 | – | 1450 | – | – | 4000 | 4000 | 31.3 | 13.5 | 40 | 27.3 | 2.82 | 4 | a |
| 5.4 | – | – | 1600 | – | 4000 | 4000 | 31.2 | 13.5 | 40 | 27.3 | 2.82 | 4 | a |
| 4.0 | 1200 | – | – | – | 3600 | 4000 | 32.3 | 17.1 | 52 | 17.5 | 1.79 | 4 | a |
| 6.3 | – | 1900 | – | – | 4000 | 4000 | 32.0 | 17.1 | 52 | 17.5 | 1.79 | 4 | a |
| 6.9 | – | – | 2050 | – | 4000 | 4000 | 31.9 | 17.1 | 52 | 17.5 | 1.79 | 4 | a |
| 5.0 | 1450 | – | – | – | 4000 | 4000 | 32.5 | 20.7 | 62 | 13.9 | 1.23 | 4 | a |
| 7.7 | – | 2300 | – | – | 4000 | 4000 | 32.4 | 20.7 | 62 | 13.9 | 1.23 | 4 | a |
| 8.4 | – | – | 2500 | – | 4000 | 4000 | 31.9 | 20.7 | 62 | 13.9 | 1.23 | 4 | a |
| 6.2 | 1850 | – | – | – | 4000 | 4000 | 32.0 | 25.5 | 78 | 7.6 | 0.789 | 4 | a |
| 9.6 | – | 2900 | – | – | 4000 | 4000 | 31.6 | 25.5 | 78 | 7.6 | 0.789 | 4 | a |
| 10.6 | – | – | 3200 | – | 4000 | 4000 | 31.6 | 25.5 | 78 | 7.6 | 0.789 | 4 | a |
| 7.0 | 2150 | – | – | – | 4000 | 4000 | 31.5 | 28.6 | 86 | 6.1 | 0.60 | 8 | b |
| 10.7 | – | 3350 | – | – | 4000 | 4000 | 31.0 | 28.6 | 86 | 6.1 | 0.60 | 8 | b |
| 11.7 | – | – | 3650 | – | 4000 | 4000 | 30.8 | 28.6 | 86 | 6.1 | 0.60 | 8 | b |
| 10.2 | 3100 | – | – | – | 4000 | 4000 | 31.6 | 41.0 | 120 | 2.9 | 0.311 | 8 | b |

DC motors

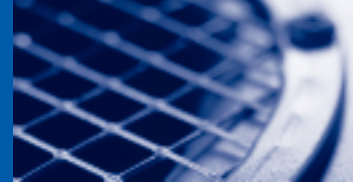
IP44, IP54, IP55

MGFRK 160-32

Technical data

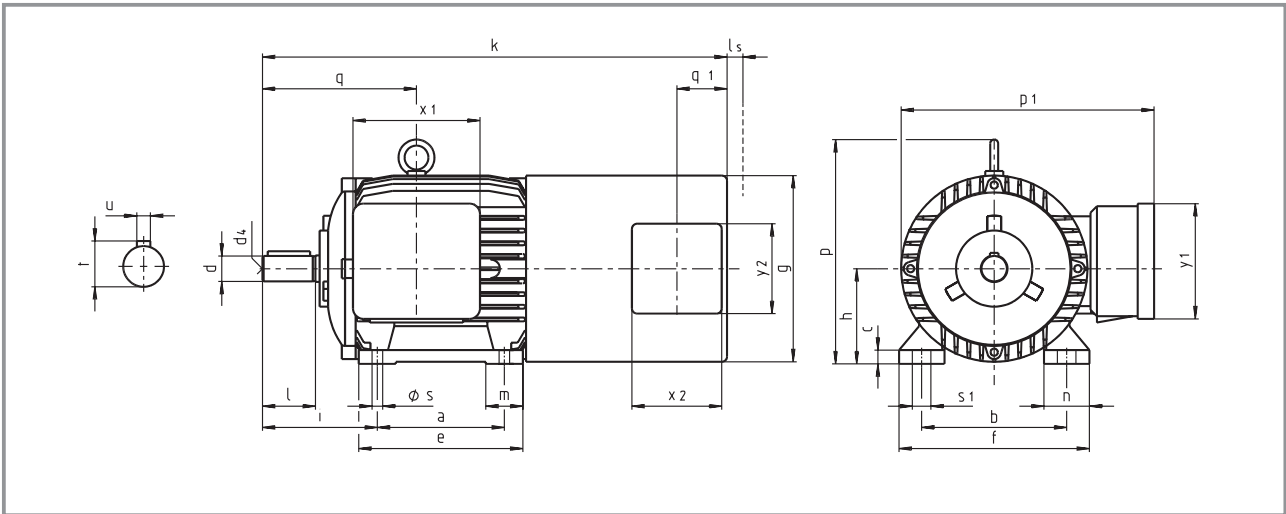
| | |
|---|--|
| Data refers to: – Form factor – Enclosure – Cooling (forced ventilation) – Continuous operation – Insulation class | F _F = 1.05 IP 54 IC 0541 S1 F |
| Total weight Inertia | m = 172 kg J = 0,112 kgm ² |
| Field excitation | U _F = 210 V I _F = 2.2 A U _F = 360 V I _F = 1.2 A |
| A-side bearing B-side bearing | 6310-2RSR-C3 6309-2RSR-C3 |
| Carbon brushes | a) 10 x 16 x 32 |
| Permissible shaft load for L/2 and n _N – reinforced bearing | F _r = 3000 N F _a = 1250 N F _{rr} = 5100 N |
| Fan variant | 220-240 V, 50-60 Hz, 0.71 A 380-460 V, 50-60 Hz, 0.31 A |
| Cooling variant | IC 0641/0741 |
| Cooling air volume Pressure drop | 365 m ³ /h 85 Pa |

| P kW | Speed n at voltage | | | | n _F | n _{Mech} | M Nm | I _{AN} A | I _{Amax} A | L _A mH | R _a 125° Ω | Carbon brushes | |
|---------|--------------------|-------|-------|---|----------------|-------------------|---------|----------------------|------------------------|----------------------|--------------------------|----------------|---------|
| | 280 V | 420 V | 460 V | – | | | | | | | | Quantity | Variant |
| 4.7 | 600 | – | – | – | 1800 | 4000 | 73.1 | 20.4 | 60 | 27.5 | 1.86 | 4 | a |
| 7.5 | – | 970 | – | – | 2900 | 4000 | 72.9 | 20.4 | 60 | 27.5 | 1.86 | 4 | a |
| 8.2 | – | – | 1100 | – | 3300 | 4000 | 72.8 | 20.4 | 60 | 27.5 | 1.86 | 4 | a |
| 7.1 | 900 | – | – | – | 2700 | 4000 | 73.0 | 29.4 | 88 | 13.1 | 0.88 | 4 | a |
| 11.1 | – | 1450 | – | – | 4000 | 4000 | 72.9 | 29.4 | 88 | 13.1 | 0.88 | 4 | a |
| 12.2 | – | – | 1600 | – | 4000 | 4000 | 72.5 | 29.4 | 88 | 13.1 | 0.88 | 4 | a |
| 9.5 | 1200 | – | – | – | 3600 | 4000 | 73.6 | 38.3 | 110 | 8.2 | 0.535 | 8 | a |
| 14.6 | – | 1900 | – | – | 4000 | 4000 | 73.3 | 38.3 | 110 | 8.2 | 0.535 | 8 | a |
| 16.0 | – | – | 2100 | – | 4000 | 4000 | 73.1 | 38.3 | 110 | 8.2 | 0.535 | 8 | a |
| 11.0 | 1450 | – | – | – | 4000 | 4000 | 73.7 | 44 | 130 | 5.9 | 0.40 | 8 | a |
| 16.8 | – | 2200 | – | – | 4000 | 4000 | 73.0 | 44 | 130 | 5.9 | 0.40 | 8 | a |
| 18.5 | – | – | 2450 | – | 4000 | 4000 | 73.0 | 44 | 130 | 5.9 | 0.40 | 8 | a |
| 13.4 | 1750 | – | – | – | 4000 | 4000 | 73.0 | 53.3 | 150 | 4.1 | 0.274 | 8 | a |
| 20.5 | – | 2700 | – | – | 4000 | 4000 | 72.5 | 53.3 | 150 | 4.1 | 0.274 | 8 | a |
| 22.2 | – | – | 2950 | – | 4000 | 4000 | 72.4 | 53.3 | 150 | 4.1 | 0.274 | 8 | a |
| 16.3 | 2200 | – | – | – | 4000 | 4000 | 70.2 | 64.4 | 190 | 2.6 | 0.188 | 8 | a |
| 24.8 | – | 3400 | – | – | 4000 | 4000 | 69.6 | 64.4 | 190 | 2.6 | 0.188 | 8 | a |
| 27.0 | – | – | 3700 | – | 4000 | 4000 | 69.4 | 64.4 | 190 | 2.6 | 0.188 | 8 | a |



MGFRK, IMB3 series

Dimensions



R.H.S. terminal box position (standard)

L.H.S. terminal box position possible (from MGFRK 132)

Shaft end to DIN 748T3

Key to DIN 6885, sheet 1

Dimensions to DIN (a, b, c...), IEC (B, A, HA...)

ls = service clearance

| Motor type | a B | b A | c HA | e BB | f AB | h H | i - | m BA | n AA | p - | p ₁ - | q - | x ₁ - | y ₁ - | s K | s ₁ - |
|--------------|--------|--------|---------|---------|---------|--------|--------|---------|---------|--------|---------------------|--------|---------------------|---------------------|--------|---------------------|
| MGFRK 090-22 | 125 | 140 | 13 | 155 | 180 | 90 | 106 | 35 | 43 | - | 241 | 146 | 120 | 110 | 10 | 18 |
| MGFRK 100-22 | 140 | 160 | 14 | 175 | 200 | 100 | 123 | 37.5 | 48 | - | 256 | 162 | 120 | 110 | 11 | 21 |
| MGFRK 112-22 | 140 | 190 | 14 | 175 | 235 | 112 | 130 | 37.5 | 56 | 267 | 282 | 160 | 120 | 110 | 11 | 21 |
| MGFRK 132-22 | 178 | 216 | 16 | 218 | 260 | 132 | 169 | 40 | 55 | 306 | 332 | 258 | 170 | 170 | 12 | 22 |
| MGFRK 160-32 | 254 | 254 | 22 | 304 | 318 | 160 | 218 | 58 | 70 | 360 | 385 | 345 | 170 | 170 | 14 | 23 |

| Motor type | d D | l E | t GA | u F | d ₄ - | ls - | g AC | q ₁ - | x ₂ - | y ₂ - | External fan | External fan |
|--------------|--------|--------|---------|--------|---------------------|---------|---------|---------------------|---------------------|---------------------|--------------|--------------|
| MGFRK 090-22 | 24 | 50 | 27 | 8 | M8 | 100 | 176 | 48 | 85 | 85 | A2E 170 | A2D 170 |
| MGFRK 100-22 | 28 | 60 | 31 | 8 | M10 | 110 | 194 | 48 | 85 | 85 | A2E 185 | A2D 185 |
| MGFRK 112-22 | 28 | 60 | 31 | 8 | M10 | 110 | 218 | 48 | 85 | 85 | A2E 210 | A2D 210 |
| MGFRK 132-22 | 38 | 80 | 41 | 10 | M12 | 170 | 257 | 48 | 85 | 85 | A2E 250 | A2D 250 |
| MGFRK 160-32 | 42 | 110 | 45 | 12 | M16 | 200 | 309 | 48 | 85 | 85 | A2E 300 | A2D 300 |

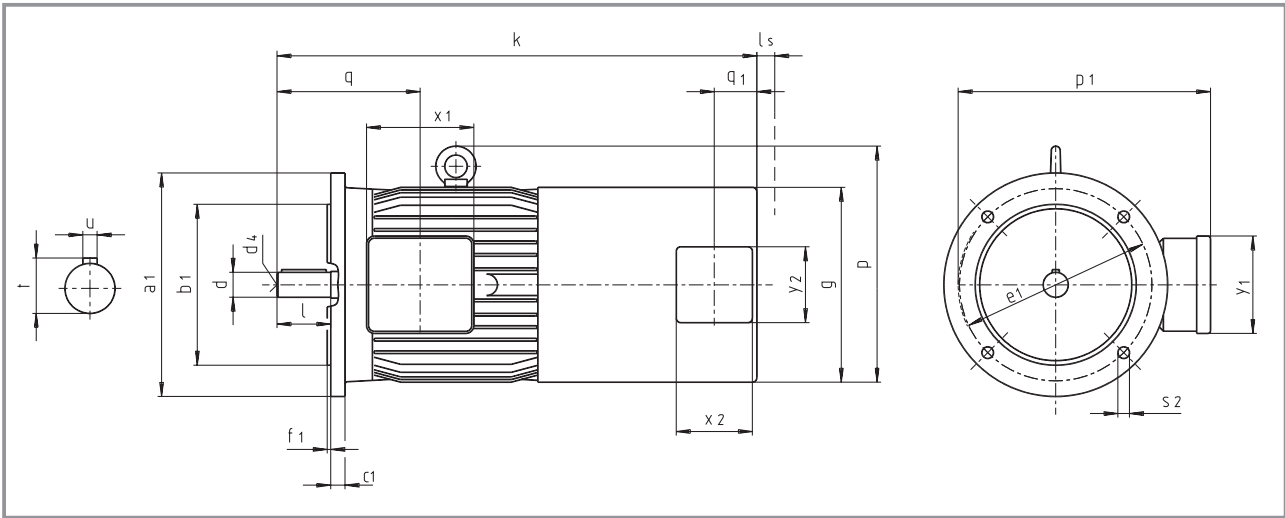
| Motor type | Encoder | | | | | | Brake BFK458-XXX | | |
|---------------|---------|------|-------------|----------|--------|-----------|------------------|-----|-----|
| | without | TD 3 | GT7.08L/420 | Resolver | ITD 21 | FOG9D+GT7 | 08 | 10 | 12 |
| MGFRK 090-22* | 492 | 492 | 492 | 651 | 651 | 651 | 554 | 554 | - |
| MGFRK 100-22* | 536 | 536 | 536 | 697 | 697 | 697 | 597 | 597 | - |
| MGFRK 112-22* | 541 | 541 | 557 | 722 | 722 | 722 | - | 622 | 622 |
| MGFRK 132-22* | 713 | 713 | 713 | 810 | 810 | 910 | - | - | 810 |
| MGFRK 160-32* | 911 | 911 | 911 | 1021 | 1021 | 1073 | - | - | - |

| Motor type | Brake BFK458-XXX | | | | Brake BFK458-XXX + Encoder | | | | |
|---------------|------------------|------|------|----|----------------------------|-------------|----------|--------|-----------|
| | 14 | 16 | 18 | 20 | TD 3 | GT7.08L/420 | Resolver | ITD 21 | FOG9D+GT7 |
| MGFRK 090-22* | - | - | - | - | 554 | 651 | 651 | 651 | 726 |
| MGFRK 100-22* | - | - | - | - | 597 | 697 | 697 | 697 | 772 |
| MGFRK 112-22* | - | - | - | - | 622 | 722 | 722 | 722 | 797 |
| MGFRK 132-22* | 810 | 810 | - | - | 810 | 910 | 910 | 910 | 987 |
| MGFRK 160-32* | - | 1021 | 1021 | - | 1021 | 1073 | 1073 | 1073 | 1148 |

*= Dimension k

MGFRK, IMB5 series

Dimensions



R.H.S. terminal box position (standard)
 L.H.S. terminal box position possible (from MGFRK 132)
 Shaft end to DIN 748T3
 Key to DIN 6885, sheet 1
 Dimensions to DIN (a, b, c...), IEC (B, A, HA...)
 ls = service clearance

| Motor type | a ₁ P | b ₁ N | c ₁ LA | e ₁ M | f ₁ T | p | p ₁ | q | s ₂ S | x ₁ | y ₁ | d D | l E | t GA | u F | d ₄ | ls | g AC | q ₁ | x ₂ | y ₂ | External fan | External fan |
|--------------|---------------------|---------------------|----------------------|---------------------|---------------------|-----|----------------|-----|---------------------|----------------|----------------|--------|--------|---------|--------|----------------|-----|---------|----------------|----------------|----------------|--------------|--------------|
| MGFRK 090-22 | 200 | 130 | 11 | 165 | 3.5 | - | 241 | 146 | 11.5 | 120 | 110 | 24 | 50 | 27 | 8 | M8 | 100 | 176 | 48 | 85 | 85 | A2E 170 | A2D 170 |
| MGFRK 100-22 | 250 | 180 | 16 | 215 | 4 | - | 256 | 162 | 13 | 120 | 110 | 28 | 60 | 31 | 8 | M10 | 110 | 194 | 48 | 85 | 85 | A2E 185 | A2D 185 |
| MGFRK 112-22 | 250 | 180 | 16 | 215 | 4 | 264 | 282 | 160 | 13 | 120 | 110 | 28 | 60 | 31 | 8 | M10 | 110 | 218 | 48 | 85 | 85 | A2E 210 | A2D 210 |
| MGFRK 132-22 | 300 | 230 | 12 | 265 | 4 | 303 | 332 | 258 | 13 | 170 | 170 | 38 | 80 | 41 | 10 | M12 | 170 | 257 | 48 | 85 | 85 | A2E 250 | A2D 250 |
| MGFRK 160-32 | 350 | 250 | 13 | 300 | 5 | 355 | 385 | 345 | 18 | 170 | 170 | 42 | 110 | 45 | 12 | M16 | 200 | 309 | 48 | 85 | 85 | A2E 300 | A2D 300 |

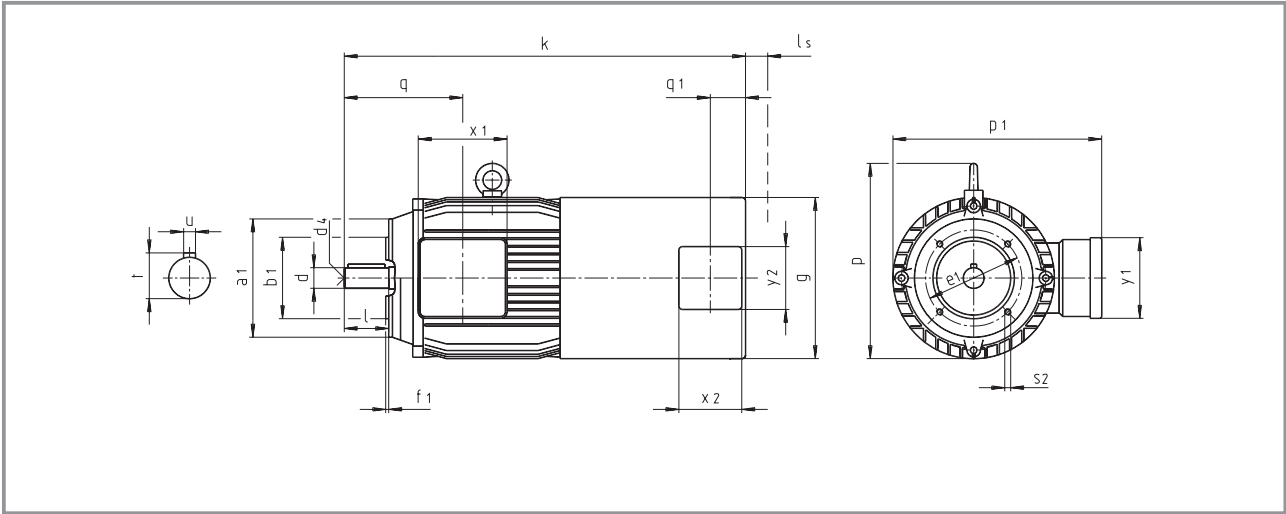
| Motor type | Encoder | | | | | | Brake BFK458-XXX | | |
|---------------|---------|------|-------------|----------|--------|-----------|------------------|-----|-----|
| | without | TD 3 | GT7.08L/420 | Resolver | ITD 21 | FOG9D+GT7 | 08 | 10 | 12 |
| MGFRK 090-22* | 492 | 492 | 492 | 651 | 651 | 651 | 554 | 554 | - |
| MGFRK 100-22* | 536 | 536 | 536 | 697 | 697 | 697 | 597 | 597 | - |
| MGFRK 112-22* | 541 | 541 | 557 | 722 | 722 | 722 | - | 622 | 622 |
| MGFRK 132-22* | 713 | 713 | 713 | 810 | 810 | 910 | - | - | 810 |
| MGFRK 160-32* | 911 | 911 | 911 | 1021 | 1021 | 1073 | - | - | - |

| Motor type | Brake BFK458-XXX | | | Brake BFK458-XXX + Encoder | | | | | |
|---------------|------------------|------|------|----------------------------|------|-------------|----------|--------|-----------|
| | 14 | 16 | 18 | 20 | TD3 | GT7.08L/420 | Resolver | ITD 21 | FOG9D+GT7 |
| MGFRK 090-22* | - | - | - | - | 554 | 651 | 651 | 651 | 726 |
| MGFRK 100-22* | - | - | - | - | 597 | 697 | 697 | 697 | 772 |
| MGFRK 112-22* | - | - | - | - | 622 | 722 | 722 | 722 | 797 |
| MGFRK 132-22* | 810 | 810 | - | - | 810 | 910 | 910 | 910 | 987 |
| MGFRK 160-32* | - | 1021 | 1021 | - | 1021 | 1073 | 1073 | 1073 | 1148 |

*= Dimension k

MGFRK, IMB14 series

Dimensions



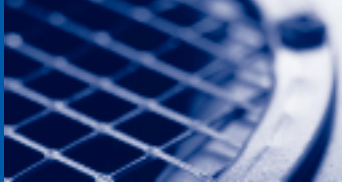
R.H.S. terminal box position (standard)
L.H.S. terminal box position possible (from MGFRK 132)
Shaft end to DIN 748T3
Key to DIN 6885, sheet 1
Dimensions to DIN (a, b, c...), IEC (B, A, HA...)
l_s = service clearance

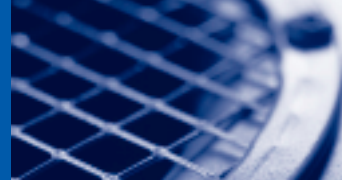
| Motor type | a ₁ P | b ₁ N | e ₁ M | f ₁ T | p | p ₁ | q | s ₂ S | x ₁ | y ₁ | d D | l E | t GA | u F | d ₄ | l _s | g AC | q ₁ | x ₂ | y ₂ | External fan | External fan |
|--------------|---------------------|---------------------|---------------------|---------------------|-----|----------------|-----|---------------------|----------------|----------------|--------|--------|---------|--------|----------------|----------------|---------|----------------|----------------|----------------|--------------|--------------|
| MGFRK 090-22 | 140 | 95 | 115 | 3 | - | 241 | 146 | M8 | 120 | 110 | 24 | 50 | 27 | 8 | M8 | 100 | 176 | 48 | 85 | 85 | A2E 170 | A2D 170 |
| | 160 | 110 | 130 | 3.5 | - | 256 | 162 | M8 | 120 | 110 | 28 | 60 | 31 | 8 | M10 | 110 | 194 | 48 | 85 | 85 | A2E 185 | A2D 185 |
| MGFRK 100-22 | 160 | 110 | 130 | 3.5 | - | 256 | 162 | M8 | 120 | 110 | 28 | 60 | 31 | 8 | M10 | 110 | 194 | 48 | 85 | 85 | A2E 185 | A2D 185 |
| | 200 | 130 | 165 | 3.5 | - | 256 | 162 | M10 | 120 | 110 | 28 | 60 | 31 | 8 | M10 | 110 | 194 | 48 | 85 | 85 | A2E 185 | A2D 185 |
| MGFRK 112-22 | 160 | 110 | 130 | 3.5 | 264 | 282 | 160 | M8 | 120 | 110 | 28 | 60 | 31 | 8 | M10 | 110 | 218 | 48 | 85 | 85 | A2E 210 | A2D 210 |
| | 200 | 130 | 165 | 3.5 | 264 | 282 | 160 | M10 | 120 | 110 | 28 | 60 | 31 | 8 | M10 | 110 | 218 | 48 | 85 | 85 | A2E 210 | A2D 210 |
| MGFRK 132-22 | 200 | 130 | 165 | 4 | 303 | 332 | 258 | M10 | 170 | 170 | 38 | 80 | 41 | 10 | M12 | 170 | 257 | 48 | 85 | 85 | A2E 250 | A2D 250 |

| Motor type | Encoder | | | | | | Brake BFK458-XXX | | |
|---------------|---------|------|-------------|----------|--------|-----------|------------------|-----|-----|
| | without | TD 3 | GT7.08L/420 | Resolver | ITD 21 | FOG9D+GT7 | 08 | 10 | 12 |
| MGFRK 090-22* | 492 | 492 | 492 | 651 | 651 | 651 | 554 | 554 | - |
| MGFRK 100-22* | 536 | 536 | 536 | 697 | 697 | 697 | 597 | 597 | - |
| MGFRK 112-22* | 541 | 541 | 557 | 722 | 722 | 722 | - | 622 | 622 |
| MGFRK 132-22* | 713 | 713 | 713 | 810 | 810 | 910 | - | - | 810 |

| Motor type | Brake BFK458-XXX | | | | Brake BFK458-XXX + Encoder | | | | |
|---------------|------------------|-----|----|----|----------------------------|-------------|----------|--------|-----------|
| | 14 | 16 | 18 | 20 | TD 3 | GT7.08L/420 | Resolver | ITD 21 | FOG9D+GT7 |
| MGFRK 090-22* | - | - | - | - | 554 | 651 | 651 | 651 | 726 |
| MGFRK 100-22* | - | - | - | - | 597 | 697 | 697 | 697 | 772 |
| MGFRK 112-22* | - | - | - | - | 622 | 722 | 722 | 722 | 797 |
| MGFRK 132-22* | 810 | 810 | - | - | 810 | 910 | 910 | 910 | 987 |

*= Dimension k





MGFQU/MGFQK series

Technical information

DC motors with square cross section ensure a maximum output power with minimum dimensions and represent the state-of-the-art in the design of DC motors.

The fully laminated stator compacted by axial welding is held with additional rods and screwed to the end shields, thus forming a very compact and rigid unit. The four-pole design with commutator poles and special arrangements of the main poles for suppressing the armature reaction ensures a spark-free commutation and long operating life of the carbon brushes even for increased starting and braking torques. The MGFQK series has additional compensation and can also be operated spark-free at very high rated current ($3 \times I_N$) and in the field weakening range. Smooth running even at low speeds is ensured by skewed armatures and low commutating voltage.

The motors have IEC or DIN mounting dimensions and can easily be connected to gearboxes of Lenze or any other brand.

Enclosure IP 23s is standard for all motors with top-mounted radial external fan, thermal bimetal contacts and temperature class F. The enamelled wire quality

corresponds to temperature class "H" in order to increase life. Higher enclosures up to IPR 44, filter, air inlet and air flow monitoring can be fitted as an option.

From size 160 the motors can be supplied in enclosure IP 54 with air/air heat exchanger.

The radial external fans can also be mounted at the sides as well as axially via a special air inlet. The position of the terminal box is normally "on top" up to size 132 and "right" from size 160 when viewed from front.

The non-drive end shields are prepared to fit numerous actual value sources.

The modular design allows easy fitting of various options such as DC and AC tachogenerators, incremental encoders and spring-operated brakes.



MGFQU 080-22 IP 43s



MGFQK 160-22 with air-to-air cooling

DC motors

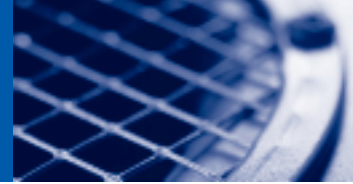
IP23s, IP43s, IPR44

MGFQU 080-22

Technical data

| | |
|---|--|
| Data refers to: – Form factor – Enclosure – Cooling (forced ventilation) – Continuous operation – Insulation class | F _F = 1.05 IP 23s IC 06 S1 F |
| Total weight Inertia | m = 36 kg J = 0.0087 kgm ² |
| Field excitation | U _F = 210 V I _F = 1.2 A U _F = 360 V I _F = 0.8 A |
| A-side bearing B-side bearing | 6305-2RSR-C3 6205-2RSR-C3 |
| Carbon brushes | a) 8 x 16 x 25 |
| Permissible shaft load for L/2 and n _N – reinforced bearing | F _r = 1200 N F _a = 400 N F _{rr} = 1950 N |
| Fan variant | 220–240 V, 50–60 Hz, 0.38 A 380–460 V, 50–60 Hz, 0.11 A |
| Cooling variant | IC 26 IC 17/37 |
| Cooling air volume Pressure drop | 80 m ³ /h 150 Pa |

| P kW | Speed n at voltage | | | | n _F | n _{Mech} | M Nm | I _{AN} A | I _{Amax} A | L _A mH | R _a 125° Ω | Carbon brushes | |
|---------|--------------------|-------|-------|-------|----------------|-------------------|---------|----------------------|------------------------|----------------------|--------------------------|----------------|---------|
| | 170 V | 280 V | 420 V | 460 V | | | | | | | | Quantity | Variant |
| 0.7 | – | 380 | – | – | 450 | 4500 | 17.9 | 5.2 | 10.4 | 123.8 | 27.3 | 4 | a |
| 1.4 | – | – | 750 | – | 900 | 4500 | 17.9 | 5.2 | 10.4 | 123.8 | 27.3 | 4 | a |
| 1.6 | – | – | – | 870 | 1050 | 4500 | 17.9 | 5.2 | 10.4 | 123.8 | 27.3 | 4 | a |
| 0.6 | 350 | – | – | – | 500 | 4500 | 17.8 | 8.4 | 16.8 | 48.4 | 10.74 | 4 | a |
| 1.5 | – | 830 | – | – | 1000 | 4500 | 17.7 | 8.4 | 16.8 | 48.4 | 10.74 | 4 | a |
| 2.7 | – | – | 1450 | – | 1750 | 4500 | 17.7 | 8.4 | 16.8 | 48.4 | 10.74 | 4 | a |
| 3.0 | – | – | – | 1600 | 1900 | 4500 | 17.7 | 8.4 | 16.8 | 48.4 | 10.74 | 4 | a |
| 1.0 | 530 | – | – | – | 800 | 4500 | 18.0 | 10.5 | 21.0 | 31.0 | 6.73 | 4 | a |
| 2.1 | – | 1150 | – | – | 1400 | 4500 | 18.0 | 10.5 | 21.0 | 31.0 | 6.73 | 4 | a |
| 3.5 | – | – | 1900 | – | 2300 | 4500 | 18.0 | 10.5 | 21.0 | 31.0 | 6.73 | 4 | a |
| 3.9 | – | – | – | 2100 | 2500 | 4500 | 17.9 | 10.5 | 21.0 | 31.0 | 6.73 | 4 | a |
| 1.4 | 770 | – | – | – | 1150 | 4500 | 17.6 | 13.3 | 26.0 | 19.4 | 4.24 | 4 | a |
| 2.8 | – | 1550 | – | – | 1850 | 4500 | 17.6 | 13.3 | 26.0 | 19.4 | 4.24 | 4 | a |
| 4.6 | – | – | 2500 | – | 3000 | 4500 | 17.4 | 13.3 | 26.0 | 19.4 | 4.24 | 4 | a |
| 5.1 | – | – | – | 2800 | 3350 | 4500 | 17.4 | 13.3 | 26.0 | 19.4 | 4.24 | 4 | a |
| 1.8 | 1000 | – | – | – | 1500 | 4500 | 18.3 | 16.1 | 32.2 | 13.8 | 2.88 | 4 | a |
| 3.5 | – | 1900 | – | – | 2300 | 4500 | 18.3 | 16.1 | 32.2 | 13.8 | 2.88 | 4 | a |
| 5.7 | – | – | 3000 | – | 3600 | 4500 | 18.1 | 16.1 | 32.2 | 13.8 | 2.88 | 4 | a |
| 6.2 | – | – | – | 3350 | 4000 | 4500 | 18.1 | 16.1 | 32.2 | 13.8 | 2.88 | 4 | a |
| 3.4 | 1800 | – | – | – | 2700 | 4500 | 18.3 | 25.7 | 50.0 | 5.4 | 1.13 | 4 | a |
| 6.0 | – | 3250 | – | – | 3900 | 4500 | 18.0 | 25.7 | 50.0 | 5.4 | 1.13 | 4 | a |
| 4.3 | 2850 | – | – | – | 4300 | 4500 | 14.4 | 30.7 | 60.0 | 2.7 | 0.55 | 4 | a |



MGFQU 100-22

Technical data

| | |
|---|--|
| Data refers to: – Form factor – Enclosure – Cooling (forced ventilation) – Continuous operation – Insulation class | $F_F = 1.05$ IP 23s IC 06 S1 F |
| Total weight Inertia | $m = 65 \text{ kg}$ $J = 0.0237 \text{ kgm}^2$ |
| Field excitation | $U_F = 210 \text{ V}$ $I_F = 2.4 \text{ A}$ $U_F = 360 \text{ V}$ $I_F = 1.3 \text{ A}$ |
| A-side bearing B-side bearing | 6306-2RSR-C3 6206-2RSR-C3 |
| Carbon brushes | a) 10 x 16 x 25 |
| Permissible shaft load for L/2 and n_N – reinforced bearing | $F_r = 1600 \text{ N}$ $F_a = 580 \text{ N}$ $F_{rr} = 3100 \text{ N}$ |
| Fan variant | 220–240 V, 50–60 Hz, 0.39 A 380–460 V, 50–60 Hz, 0.11 A |
| Cooling variant | IC 26 IC 17/37 |
| Cooling air volume Pressure drop | 350 m ³ /h 250 Pa |

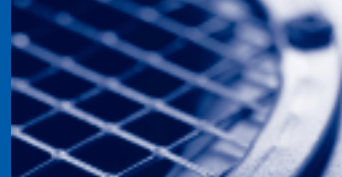
| P kW | Speed n at voltage | | | | n_F | n_{Mech} | M Nm | I_{AN} A | I_{Amax} A | L_A mH | R_a 125° Ω | Carbon brushes | |
|---------|--------------------|-------|-------|---|-------|------------|---------|---------------|-----------------|-------------|-----------------|----------------|---------|
| | 280 V | 420 V | 460 V | – | | | | | | | | Quantity | Variant |
| 1.3 | 350 | – | – | – | 530 | 4500 | 35.7 | 8.0 | 16 | 83.7 | 14.11 | 4 | a |
| 2.4 | – | 650 | – | – | 800 | 4500 | 35.6 | 8.0 | 16 | 83.7 | 14.11 | 4 | a |
| 2.7 | – | – | 720 | – | 850 | 4500 | 35.0 | 8.0 | 16 | 83.7 | 14.11 | 4 | a |
| 2.2 | 600 | – | – | – | 900 | 4500 | 35.8 | 11.5 | 23 | 41.0 | 6.61 | 4 | a |
| 3.8 | – | 1000 | – | – | 1200 | 4500 | 35.7 | 11.5 | 23 | 41.0 | 6.61 | 4 | a |
| 4.3 | – | – | 1150 | – | 1400 | 4500 | 36.4 | 11.5 | 23 | 41.0 | 6.61 | 4 | a |
| 2.9 | 800 | – | – | – | 1200 | 4500 | 35.5 | 14.1 | 28 | 26.9 | 4.522 | 4 | a |
| 4.8 | – | 1300 | – | – | 1550 | 4500 | 35.3 | 14.1 | 28 | 26.9 | 4.522 | 4 | a |
| 5.4 | – | – | 1450 | – | 1750 | 4500 | 34.8 | 14.1 | 28 | 26.9 | 4.522 | 4 | a |
| 4.7 | 1200 | – | – | – | 1800 | 4500 | 37.4 | 21.2 | 42.5 | 13.4 | 2.15 | 4 | a |
| 7.6 | – | 1950 | – | – | 2350 | 4500 | 37.1 | 21.2 | 42.5 | 13.4 | 2.15 | 4 | a |
| 8.4 | – | – | 2150 | – | 2600 | 4500 | 37.1 | 21.2 | 42.5 | 13.4 | 2.15 | 4 | a |
| 5.8 | 1500 | – | – | – | 2250 | 4500 | 36.3 | 25.0 | 50 | 9.3 | 1.521 | 4 | a |
| 9.1 | – | 2400 | – | – | 2900 | 4500 | 36.1 | 25.0 | 50 | 9.3 | 1.521 | 4 | a |
| 10.0 | – | – | 2650 | – | 3200 | 4500 | 36.0 | 25.0 | 50 | 9.3 | 1.521 | 4 | a |
| 6.4 | 1700 | – | – | – | 2550 | 4500 | 36.3 | 27.5 | 55 | 7.3 | 1.226 | 4 | a |
| 10.2 | – | 2700 | – | – | 3250 | 4500 | 36.1 | 27.5 | 55 | 7.3 | 1.226 | 4 | a |
| 11.2 | – | – | 2950 | – | 3550 | 4500 | 35.9 | 27.5 | 55 | 7.3 | 1.226 | 4 | a |
| 7.3 | 1950 | – | – | – | 2900 | 4500 | 36.1 | 30.9 | 62 | 5.9 | 0.954 | 4 | a |
| 11.4 | – | 3050 | – | – | 3650 | 4500 | 35.7 | 30.9 | 62 | 5.9 | 0.954 | 4 | a |
| 12.5 | – | – | 3350 | – | 4000 | 4500 | 35.6 | 30.9 | 62 | 5.9 | 0.954 | 4 | a |
| 12.1 | 3250 | – | – | – | 4500 | 4500 | 35.7 | 49.0 | 98 | 2.3 | 0.808 | 8 | a |

MGFQU 112-22

Technical data

| | |
|---|--|
| Data refers to: – Form factor – Enclosure – Cooling (forced ventilation) – Continuous operation – Insulation class | F _F = 1.05 IP 23s IC 06 S1 F |
| Total weight Inertia | m = 115 kg J = 0.0475 kgm ² |
| Field excitation | U _F = 210 V I _F = 3.4 A U _F = 360 V I _F = 2.2 A |
| A-side bearing B-side bearing | 6308-2RSR-C3 6308-2RSR-C3 |
| Carbon brushes | a) 10 x 16 x 25 |
| Permissible shaft load for L/2 and n _N – reinforced bearing | F _r = 2300 N F _a = 1000 N F _{rr} = 4900 N |
| Fan variant | 220–240 V, 50–60 Hz, 1.15 A 380–460 V, 50–60 Hz, 0.5 A |
| Cooling variant | IC 26 IC 17/37 |
| Cooling air volume Pressure drop | 670 m ³ /h 380 Pa |

| P kW | Speed n at voltage | | | | n _F | n _{Mech} | M Nm | I _{AN} A | I _{Amax} A | L _A mH | R _a 125° Ω | Carbon brushes | |
|---------|--------------------|-------|-------|---|----------------|-------------------|---------|----------------------|------------------------|----------------------|--------------------------|----------------|---------|
| | 280 V | 420 V | 460 V | – | | | | | | | | Quantity | Variant |
| 2.8 | 360 | – | – | – | 550 | 4000 | 75.4 | 17.4 | 35 | 43 | 6.37 | 4 | a |
| 5.2 | – | 660 | – | – | 800 | 4000 | 75.4 | 17.4 | 35 | 43 | 6.37 | 4 | a |
| 5.9 | – | – | 750 | – | 900 | 4000 | 75.3 | 17.4 | 35 | 43 | 6.37 | 4 | a |
| 4.5 | 570 | – | – | – | 850 | 4000 | 76.0 | 23.8 | 48 | 23 | 3.51 | 4 | a |
| 7.8 | – | 950 | – | – | 1150 | 4000 | 75.9 | 23.8 | 48 | 23 | 3.51 | 4 | a |
| 8.7 | – | – | 1100 | – | 1300 | 4000 | 75.8 | 23.8 | 48 | 23 | 3.51 | 4 | a |
| 5.9 | 790 | – | – | – | 1200 | 4000 | 71.4 | 28.5 | 57 | 14.4 | 2.34 | 8 | a |
| 9.8 | – | 1300 | – | – | 1550 | 4000 | 71.2 | 28.5 | 57 | 14.4 | 2.34 | 8 | a |
| 10.9 | – | – | 1450 | – | 1750 | 4000 | 71.2 | 28.5 | 57 | 14.4 | 2.34 | 8 | a |
| 9.0 | 1150 | – | – | – | 1750 | 4000 | 72.7 | 40.0 | 80 | 7.6 | 1.20 | 8 | a |
| 14.5 | – | 1900 | – | – | 2300 | 4000 | 72.5 | 40.0 | 80 | 7.6 | 1.20 | 8 | a |
| 16.0 | – | – | 2100 | – | 2500 | 4000 | 72.4 | 40.0 | 80 | 7.6 | 1.20 | 8 | a |
| 13.0 | 1650 | – | – | – | 2000 | 4000 | 74.9 | 55.0 | 110 | 4.3 | 0.646 | 8 | a |
| 20.5 | – | 2600 | – | – | 3100 | 4000 | 74.6 | 55.0 | 110 | 4.3 | 0.646 | 8 | a |
| 22.5 | – | – | 2900 | – | 3500 | 4000 | 74.5 | 55.0 | 110 | 4.3 | 0.646 | 8 | a |
| 15.9 | 2050 | – | – | – | 3050 | 4000 | 73.8 | 67.0 | 134 | 3.0 | 0.443 | 8 | a |
| 24.8 | – | 3200 | – | – | 3850 | 4000 | 73.5 | 67.0 | 134 | 3.0 | 0.443 | 8 | a |
| 27.1 | – | – | 3500 | – | 4000 | 4000 | 72.7 | 67.0 | 134 | 3.0 | 0.443 | 8 | a |



MGFQU 132-32

Technical data

| | |
|---|--|
| Data refers to: – Form factor – Enclosure – Cooling (forced ventilation) – Continuous operation – Insulation class | $F_F = 1.05$ IP 23s IC 06 S1 F |
| Total weight Inertia | $m = 170 \text{ kg}$ $J = 0.1120 \text{ kgm}^2$ |
| Field excitation | $U_F = 210 \text{ V } I_F = 4.0 \text{ A}$ $U_F = 360 \text{ V } I_F = 2.2 \text{ A}$ |
| A-side bearing B-side bearing | 6308-2RSR-C3 6308-2RSR-C3 |
| Carbon brushes | a) 10 x 20 x 32 b) 12.5 x 20 x 32 ZW c) 12.5 x 20 x 32 |
| Permissible shaft load for $L/2$ and n_N – reinforced bearing | $F_r = 2300 \text{ N}$ $F_a = 1350 \text{ N}$ $F_{rr} = 4900 \text{ N}$ |
| Fan variant | 380–440 V, 50–60 Hz, 0.66 A 345–540 V, 50–60 Hz, 1.4 A |
| Cooling variant | IC 26 IC 17/37 |
| Cooling air volume Pressure drop | 1000 m ³ /h 450 Pa |

| P kW | Speed n at voltage | | | | n_F | n_{Mech} | M Nm | I_{AN} A | I_{Amax} A | L_A mH | R_a 125° Ω | Carbon brushes | |
|---------|--------------------|-------|-------|---|-------|------------|---------|---------------|-----------------|-------------|-----------------|----------------|---------|
| | 280 V | 420 V | 460 V | – | | | | | | | | Quantity | Variant |
| 5.4 | 330 | – | – | – | 500 | 4000 | 156.4 | 30.4 | 61 | 31.8 | 3.17 | 8 | a |
| 9.5 | – | 590 | – | – | 700 | 4000 | 155.8 | 30.4 | 61 | 31.8 | 3.17 | 8 | a |
| 10.7 | – | – | 660 | – | 800 | 4000 | 155.7 | 30.4 | 61 | 31.8 | 3.17 | 8 | a |
| 10.6 | 650 | – | – | – | 980 | 4000 | 156.4 | 49.6 | 100 | 12.0 | 1.19 | 8 | a |
| 17.3 | – | 1050 | – | – | 1250 | 4000 | 156.0 | 49.6 | 100 | 12.0 | 1.19 | 8 | a |
| 19.2 | – | – | 1150 | – | 1400 | 4000 | 155.9 | 49.6 | 100 | 12.0 | 1.19 | 8 | a |
| 14.9 | 930 | – | – | – | 1400 | 4000 | 153.9 | 65.2 | 130 | 6.8 | 0.667 | 8 | a |
| 23.7 | – | 1500 | – | – | 1800 | 4000 | 153.4 | 65.2 | 130 | 6.8 | 0.667 | 8 | a |
| 26.2 | – | – | 1650 | – | 2000 | 4000 | 153.3 | 65.2 | 130 | 6.8 | 0.667 | 8 | a |
| 18.4 | 1150 | – | – | – | 1725 | 4000 | 154.8 | 78.8 | 160 | 4.7 | 0.470 | 8 | a |
| 29.1 | – | 1800 | – | – | 2150 | 4000 | 154.3 | 78.8 | 160 | 4.7 | 0.470 | 8 | a |
| 32.1 | – | – | 2000 | – | 2400 | 4000 | 154.1 | 78.8 | 160 | 4.7 | 0.470 | 8 | a |
| 24.4 | 1450 | – | – | – | 2150 | 4000 | 158.6 | 101 | 200 | 3.0 | 0.289 | 8 | b |
| 38.0 | – | 2300 | – | – | 2750 | 4000 | 157.9 | 101 | 200 | 3.0 | 0.289 | 8 | b |
| 41.8 | – | – | 2550 | – | 3050 | 4000 | 157.7 | 101 | 200 | 3.0 | 0.289 | 8 | b |
| 29.9 | 2050 | – | – | – | 3050 | 4000 | 139.3 | 120 | 240 | 1.7 | 0.171 | 8 | c |
| 46.0 | – | 3150 | – | – | 3800 | 4000 | 139.5 | 120 | 240 | 1.7 | 0.171 | 8 | c |
| 50.4 | – | – | 3450 | – | 4000 | 4000 | 139.5 | 120 | 240 | 1.7 | 0.171 | 8 | c |

DC motors

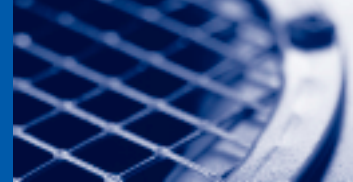
IP23s, IP43s, IPR44

MGFQU 160-22

Technical data

| | |
|---|--|
| Data refers to: – Form factor – Enclosure – Cooling (forced ventilation) – Continuous operation – Insulation class | F _F = 1.05 IP 23s IC 06 S1 F |
| Total weight Inertia | m = 250 kg J = 0.2452 kgm ² |
| Field excitation | U _F = 210 V I _F = 6.7 A U _F = 360 V I _F = 4.0 A |
| A-side bearing B-side bearing | 6312-2RSR-C3 6312-2RSR-C3 |
| Carbon brushes | a) 12.5 x 25 x 32 b) 12.5 x 25 x 32 ZW |
| Permissible shaft load for L/2 and n _N – reinforced bearing | F _r = 4950 N F _a = 3580 N F _{rr} = 9700 N |
| Fan variant | 345–540 V, 50–60 Hz, 1.4 A |
| Cooling variant | IC 26 IC 17/37 |
| Cooling air volume Pressure drop | 1300 m ³ /h 500 Pa |

| P kW | Speed n at voltage | | | | n _F min ⁻¹ | n _{Mech} min ⁻¹ | M Nm | I _{AN} A | I _{Amax} A | L _A mH | R _a 125° Ω | Carbon brushes | |
|----------------------------|--------------------|------------------|--------|--------|-------------------------------------|--|------------|----------------------|------------------------|----------------------|--------------------------|----------------|---------|
| | 420 V | 460 V | – | – | | | | | | | | Quantity | Variant |
| 24.9 27.7 | 840 – | – 940 | – – | – – | 1000 1100 | 3600 3600 | 283 283 | 72,0 72,0 | 145 145 | 10.8 10.8 | 0.87 0.87 | 4 4 | a a |
| 33.4 37.0 | 1100 – | – 1250 | – – | – – | 1300 1500 | 3600 3600 | 290 290 | 93,3 93,3 | 187 187 | 6.5 6.5 | 0.525 0.525 | 8 8 | a a |
| 40.5 44.8 | 1300 – | – 1450 | – – | – – | 1550 1750 | 3600 3600 | 290 290 | 111 111 | 220 220 | 4.8 4.8 | 0.384 0.384 | 8 8 | a a |
| 48.7 53.8 | 1600 – | – 1800 | – – | – – | 1900 2150 | 3600 3600 | 288 288 | 131 131 | 262 262 | 3.3 3.3 | 0.268 0.268 | 8 8 | a a |
| 61.6 68.0 | 2050 – | – 2300 | – – | – – | 2450 2750 | 3600 3600 | 283 283 | 163 163 | 325 325 | 2.1 2.1 | 0.171 0.171 | 12 12 | b b |
| 82.0 90.6 | 2800 – | – 3100 | – – | – – | 3350 3600 | 3600 3600 | 279 279 | 215 215 | 430 430 | 1.2 1.2 | 0.099 0.099 | 12 12 | a a |



MGFQU 160-32

Technical data

| | |
|--|--|
| Data refers to: – Form factor – Enclosure – Cooling (forced ventilation) – Continuous operation – Insulation class – Ambient temperature at 40 °C power/torque derating | $F_F = 1.05$ IP 23s IC 06 S1 F 25 °C 83% |
| Total weight Inertia | $m = 285 \text{ kg}$ $J = 0.32 \text{ kgm}^2$ |
| Field excitation | $U_F = 210 \text{ V } I_F = 7 \text{ A}$ $U_F = 360 \text{ V } I_F = 4 \text{ A}$ |
| A-side bearing B-side bearing | 6312-2RSR-C3 6312-2RSR-C3 |
| Carbon brushes | a) 12.5 x 25 x 32 b) 12.5 x 25 x 32 ZW |
| Permissible shaft load for $L/2$ and n_N – reinforced bearing | $F_r = 5050 \text{ N}$ $F_a = 3580 \text{ N}$ $F_{rr} = 9900 \text{ N}$ |
| Fan variant | 345–540 V, 50–60 Hz, 1.4 A |
| Cooling variant | IC 26 IC 17/37 |
| Cooling air volume Pressure drop | 1300 m ³ /h 500 Pa |

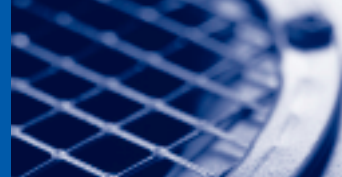
| P kW | Speed n at voltage | | | | n_F | n_{Mech} | M Nm | I_{AN} A | I_{Amax} A | L_A mH | $R_a 125^\circ$ Ω | Carbon brushes | |
|--------------------------|--------------------|------------------|--------|--------|--------------|-------------------|------------|---------------|-----------------|--------------|-----------------------------|-------------------|-------------------|
| | 420 V | 460 V | – | – | | | | | | | | min ⁻¹ | min ⁻¹ |
| 22.5 25.0 | 650 – | – 720 | – – | – – | 800 870 | 3600 3600 | 330 330 | 66 66 | 130 130 | 14.6 14.6 | 1.05 1.05 | 4 4 | a a |
| 30.4 33.8 | 870 – | – 950 | – – | – – | 1050 1150 | 3600 3600 | 334 334 | 85 85 | 170 170 | 8.9 8.9 | 0.63 0.63 | 8 8 | a a |
| 36.2 40.0 | 1050 – | – 1150 | – – | – – | 1250 1400 | 3600 3600 | 333 333 | 100 100 | 200 200 | 6.5 6.5 | 0.374 0.374 | 8 8 | a a |
| 43.8 48.4 | 1250 – | – 1400 | – – | – – | 1500 1700 | 3600 3600 | 329 329 | 119 119 | 240 240 | 4.5 4.5 | 0.324 0.324 | 8 8 | a a |
| 56.0 62.0 | 1600 – | – 1800 | – – | – – | 1900 2150 | 3600 3600 | 330 330 | 149 149 | 300 300 | 2.9 2.9 | 0.206 0.206 | 12 12 | b b |
| 79 86.2 | 2200 – | – 2400 | – – | – – | 2650 2900 | 3600 3600 | 343 343 | 207 207 | 410 410 | 1.6 1.6 | 0.115 0.115 | 12 12 | a a |

MGFQK 063-32

Technical data

| | |
|---|---|
| Data refers to: – Form factor – Enclosure – Cooling (forced ventilation) – Continuous operation – Insulation class | $F_F = 1.05$ IP 23s IC 06 S1 F |
| Total weight Inertia | $m = 19 \text{ kg}$ $J = 0.0032 \text{ kgm}^2$ |
| Field excitation | $U_F = 210 \text{ V } I_F = 1.0 \text{ A}$ $U_F = 360 \text{ V } I_F = 0.52 \text{ A}$ |
| A-side bearing B-side bearing | 6204-2RSR-C3 6204-2RSR-C3 |
| Carbon brushes | a) 6.3 x 16 x 20 |
| Permissible shaft load for L/2 and n_N – reinforced bearing | $F_r = 750 \text{ N}$ $F_a = 400 \text{ N}$ $F_{rr} = 1100 \text{ N}$ |
| Fan variant | 220–240 V, 50–60 Hz, 0.39 A 380–460 V, 50–60 Hz, 0.11 A |
| Cooling variant | IC 26 IC 17/37 |
| Cooling air volume Pressure drop | 65 m ³ /h 70 Pa |

| P kW | Speed n at voltage | | | | η_F | η_{Mech} | M Nm | I_{AN} A | I_{Amax} A | L_A mH | $R_a^{125^\circ}$ Ω | Carbon brushes | |
|--------------|--------------------|-----------|--------|--------|--------------|----------------------|------------|---------------|-----------------|--------------|-------------------------------|----------------|---------|
| | 170 V | 280 V | – | – | | | | | | | | Quantity | Variant |
| 0.33 0.85 | 400 – | – 1150 | – – | – – | 1300 3450 | 4500 4500 | 7.0 6.9 | 5.3 5.3 | 15 15 | 57.5 57.5 | 19.4 19.4 | 4 4 | a a |
| 0.5 1.1 | 750 – | – 1650 | – – | – – | 2250 4500 | 4500 4500 | 7.0 6.9 | 5.7 5.7 | 17 17 | 39.7 39.7 | 13.26 13.26 | 4 4 | a a |
| 0.75 1.5 | 1000 – | – 2100 | – – | – – | 3000 4500 | 4500 4500 | 7.0 6.9 | 8.0 8.0 | 24 24 | 26.5 26.5 | 8.5 8.5 | 4 4 | a a |
| 1.0 2.0 | 1300 – | – 2700 | – – | – – | 3900 4500 | 4500 4500 | 7.0 7.0 | 10.2 10.2 | 30 30 | 15.5 15.5 | 5.59 5.59 | 4 4 | a a |
| 1.3 2.4 | 1700 – | – 3200 | – – | – – | 4500 4500 | 4500 4500 | 7.0 7.0 | 11.3 11.3 | 34 34 | 12.5 12.5 | 4.09 4.09 | 4 4 | a a |



MGFQK 100-32

Technical data

| | |
|---|---|
| Data refers to: – Form factor – Enclosure – Cooling (forced ventilation) – Continuous operation – Insulation class | $F_F = 1.05$ IP 23s IC 06 S1 F |
| Total weight Inertia | $m = 63 \text{ kg}$ $J = 0.0170 \text{ kgm}^2$ |
| Field excitation | $U_F = 210 \text{ V } I_F = 1.6 \text{ A}$ $U_F = 360 \text{ V } I_F = 0.86 \text{ A}$ |
| A-side bearing B-side bearing | 6306-2RSR-C3 6206-2RSR-C3 |
| Carbon brushes | a) 10 x 12.5 x 25 |
| Permissible shaft load for L/2 and n_N – reinforced bearing | $F_r = 1600 \text{ N}$ $F_a = 580 \text{ N}$ $F_{rr} = 3100 \text{ N}$ |
| Fan variant | 220–240 V, 50–60 Hz, 0.76 A 380–460 V, 50–60 Hz, 0.25 A |
| Cooling variant | IC 26 IC 17/37 |
| Cooling air volume Pressure drop | 330 m ³ /h 290 Pa |

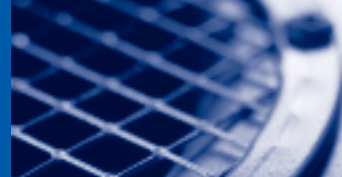
| P kW | Speed n at voltage | | | | n_F | n_{Mech} | M Nm | I_{AN} A | I_{Amax} A | L_A mH | R_a 125° Ω | Carbon brushes | |
|---------|--------------------|-------|-------|---|-------|------------|---------|---------------|-----------------|-------------|-----------------|----------------|---------|
| | 280 V | 420 V | 460 V | – | | | | | | | | Quantity | Variant |
| 1.7 | 470 | – | – | – | 1400 | 4500 | 34.7 | 10.8 | 32 | 70.2 | 10.9 | 4 | a |
| 3.2 | – | 880 | – | – | 2650 | 4500 | 34.7 | 10.8 | 32 | 70.2 | 10.9 | 4 | a |
| 3.6 | – | – | 1000 | – | 3000 | 4500 | 34.6 | 10.8 | 32 | 70.2 | 10.9 | 4 | a |
| 3.2 | 850 | – | – | – | 2550 | 4500 | 34.7 | 17.6 | 53 | 31.2 | 4.79 | 4 | a |
| 5.5 | – | 1500 | – | – | 4500 | 4500 | 34.7 | 17.6 | 53 | 31.2 | 4.79 | 4 | a |
| 6.1 | – | – | 1650 | – | 4500 | 4500 | 34.6 | 17.6 | 53 | 31.2 | 4.79 | 4 | a |
| 4.0 | 1100 | – | – | – | 3300 | 4500 | 34.6 | 19.4 | 58 | 21.9 | 3.42 | 4 | a |
| 6.6 | – | 1850 | – | – | 4500 | 4500 | 34.4 | 19.4 | 58 | 21.9 | 3.42 | 4 | a |
| 7.4 | – | – | 2050 | – | 4500 | 4500 | 34.4 | 19.4 | 58 | 21.9 | 3.42 | 4 | a |
| 5.3 | 1450 | – | – | – | 4350 | 4500 | 34.5 | 26.0 | 78 | 13.7 | 2.19 | 4 | a |
| 8.5 | – | 2400 | – | – | 4500 | 4500 | 34.3 | 26.0 | 78 | 13.7 | 2.19 | 4 | a |
| 9.5 | – | – | 2650 | – | 4500 | 4500 | 34.2 | 26.0 | 78 | 13.7 | 2.19 | 4 | a |
| 6.6 | 1850 | – | – | – | 4500 | 4500 | 34.3 | 29.0 | 87 | 9.5 | 1.6 | 8 | a |
| 10.6 | – | 3000 | – | – | 4500 | 4500 | 34.1 | 29.0 | 87 | 9.5 | 1.6 | 8 | a |
| 11.6 | – | – | 3250 | – | 4500 | 4500 | 34.0 | 29.0 | 87 | 9.5 | 1.6 | 8 | a |
| 11.6 | 3300 | – | – | – | 4500 | 4500 | 33.8 | 48.0 | 144 | 3.5 | 0.554 | 8 | a |

MGFQK 160-22

Technical data

| | |
|---|--|
| Data refers to: – Form factor – Enclosure – Cooling (forced ventilation) – Continuous operation – Insulation class | F _F = 1.05 IP 23s IC 06 S1 F |
| Total weight Inertia | m = 250 kg J = 0.2452 kgm ² |
| Field excitation | U _F = 210 V I _F = 6.2 A U _F = 360 V I _F = 3.5 A |
| A-side bearing B-side bearing | 6312-2RSR-C3 6312-2RSR-C3 |
| Carbon brushes | a) 12.5 x 25 x 32 b) 12.5 x 25 x 32 ZW |
| Permissible shaft load for L/2 and n _N – reinforced bearing | F _r = 4950 N F _a = 3580 N F _{rr} = 9700 N |
| Fan variant | 345–540 V, 50–60 Hz, 1.4 A |
| Cooling variant | IC 26 IC 17/37 IC 0666 |
| Cooling air volume Pressure drop | 1300 m ³ /h 500 Pa |

| P kW | Speed n at voltage | | | | n _F min ⁻¹ | n _{Mech} min ⁻¹ | M Nm | I _{AN} A | I _{Amax} A | L _A mH | R _a 125 ^g Ω | Carbon brushes | |
|----------------------------|--------------------|------------------|--------|--------|-------------------------------------|--|------------|----------------------|------------------------|----------------------|--------------------------------------|----------------|---------|
| | 420 V | 460 V | – | – | | | | | | | | Quantity | Variant |
| 25.1 27.9 | 820 – | – 900 | – – | – – | 2450 2700 | 3600 3600 | 292 292 | 72 72 | 180 180 | 9.2 9.2 | 0.884 0.884 | 4 4 | a a |
| 33.7 37.3 | 1100 – | – 1200 | – – | – – | 3300 3600 | 3600 3600 | 295 295 | 93 93 | 232 232 | 5.6 5.6 | 0.50 0.50 | 8 8 | a a |
| 40.8 45.0 | 1300 – | – 1450 | – – | – – | 3600 3600 | 3600 3600 | 300 300 | 111 111 | 275 275 | 4.1 4.1 | 0.368 0.368 | 8 8 | a a |
| 49.2 54.4 | 1550 – | – 1750 | – – | – – | 3600 3600 | 3600 3600 | 298 298 | 132 132 | 330 330 | 2.8 2.8 | 0.260 0.260 | 8 8 | a a |
| 62.0 68.2 | 2000 – | – 2200 | – – | – – | 3600 3600 | 3600 3600 | 293 293 | 163 163 | 410 410 | 1.8 1.8 | 0.16 0.16 | 12 12 | b b |
| 83.0 90.8 | 2750 – | – 3000 | – – | – – | 3600 3600 | 3600 3600 | 289 289 | 215 215 | 540 540 | 1.0 1.0 | 0.09 0.09 | 12 12 | a a |



MGFQK 160-32

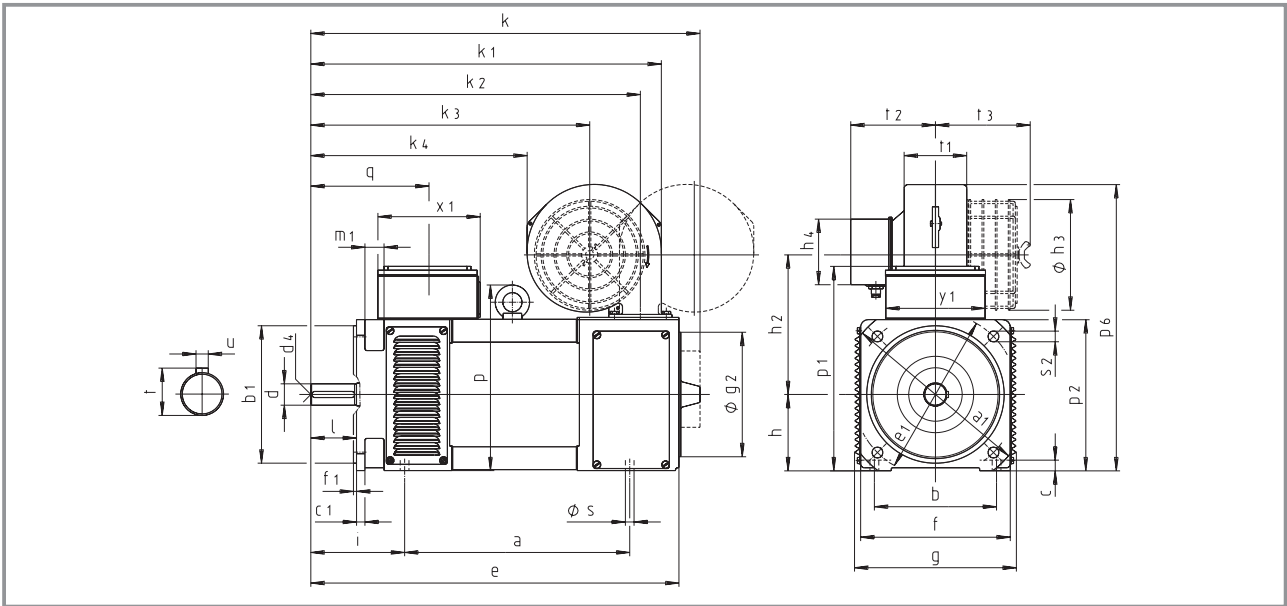
Technical data

| | |
|--|--|
| Data refers to: – Form factor – Enclosure – Cooling (forced ventilation) – Continuous operation – Insulation class – Ambient temperature at 40 °C power/torque derating | $F_F = 1.05$ IP 23s IC 06 S1 F 25 °C 83% |
| Total weight Inertia | $m = 285 \text{ kg}$ $J = 0.32 \text{ kgm}^2$ |
| Field excitation | $U_F = 210 \text{ V}$ $I_F = 6.2 \text{ A}$ $U_F = 360 \text{ V}$ $I_F = 3.6 \text{ A}$ |
| A-side bearing B-side bearing | 6312-2RSR-C3 6312-2RSR-C3 |
| Carbon brushes | a) 12.5 x 25 x 32 b) 12.5 x 25 x 32 ZW |
| Permissible shaft load for $L/2$ and n_N – reinforced bearing | $F_r = 5050 \text{ N}$ $F_a = 3580 \text{ N}$ $F_{rr} = 9900 \text{ N}$ |
| Fan variant | 345–540 V, 50–60 Hz, 1.4 A |
| Cooling variant | IC 26 IC 17/37 IC 0666 |
| Cooling air volume Pressure drop | 1300 m ³ /h 500 Pa |

| P kW | Speed n at voltage | | | | n_F min ⁻¹ | n_{Mech} min ⁻¹ | M Nm | I_{AN} A | I_{Amax} A | L_A mH | R_a 125° Ω | Carbon brushes | |
|----------------------------|--------------------|------------------|--------|--------|----------------------------|---------------------------------|------------|---------------|-----------------|--------------|-----------------|----------------|---------|
| | 420 V | 460 V | – | – | | | | | | | | Quantity | Variant |
| 22.6 25.2 | 630 – | – 700 | – – | – – | 1900 2100 | 3600 3600 | 343 343 | 66 66 | 165 165 | 12.4 12.4 | 1.0 1.0 | 4 4 | a a |
| 30.8 34.1 | 850 – | – 940 | – – | – – | 2550 2800 | 3600 3600 | 347 347 | 86 86 | 215 215 | 7.5 7.5 | 0.597 0.597 | 8 8 | a a |
| 36.5 40.4 | 1000 – | – 1100 | – – | – – | 3000 3300 | 3600 3600 | 346 346 | 100 100 | 250 250 | 5.5 5.5 | 0.448 0.448 | 8 8 | a a |
| 44.1 48.7 | 1250 – | – 1350 | – – | – – | 3600 3600 | 3600 3600 | 344 344 | 120 120 | 300 300 | 3.6 3.6 | 0.307 0.307 | 12 12 | a a |
| 56.2 61.9 | 1550 – | – 1700 | – – | – – | 3600 3600 | 3600 3600 | 343 343 | 149 149 | 370 370 | 2.4 2.4 | 0.200 0.200 | 12 12 | b b |
| 79.3 87.6 | 2100 – | – 2350 | – – | – – | 3600 3600 | 3600 3600 | 360 356 | 207 207 | 515 515 | 1.4 1.4 | 0.107 0.107 | 12 12 | a a |

MGFQU/MGFQK, IMB35 series

Dimensions



Terminal box position "on top" (standard)

Shaft end to DIN 748T3

Key to DIN 6885, sheet 1

Dimensions to DIN (a, b, c...), IEC (B, A, HA...)

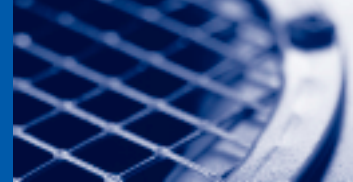
** only in IMB5 design

| Motor type | a B | a ₁ P | b A | b ₁ N | c HA | c ₁ LA | e BB | e ₁ M | f AB | f ₁ T | g AC | g ₂ - | h H | i - | k ₂ - | m ₁ - | p - | p ₁ - | p ₂ - | q - | s K |
|----------------|--------|---------------------|--------|---------------------|---------|----------------------|---------|---------------------|---------|---------------------|---------|---------------------|--------|--------|---------------------|---------------------|--------|---------------------|---------------------|--------|--------|
| MGFQK 063-32** | - | 200 | - | 130 | - | 10 | - | 165 | 150 | 3.5 | 141 | - | 75 | - | 361 | 20 | - | 202 | 150 | 125 | - |
| MGFQU 080-22 | 255 | 200 | 125 | 130 | 11 | 11 | 350 | 165 | 159 | 3.5 | 174 | 140 | 80 | 100 | 385 | 21 | 194 | 220 | 158 | 138 | 9.5 |
| MGFQU 100-22 | 295 | 250 | 160 | 180 | 14 | 11 | 382 | 215 | 196 | 4 | 212 | 163 | 100 | 123 | 432 | 25 | 243 | 290 | 198 | 155 | 11.5 |
| MGFQK 100-32 | 295 | 250 | 160 | 180 | 14 | 11 | 382 | 215 | 196 | 4 | 212 | 163 | 100 | 123 | 420 | 25 | 248 | 290 | 198 | 155 | 11.5 |
| MGFQU 112-22 | 385 | 300 | 190 | 230 | 16 | 12 | 504 | 265 | 220 | 4 | 235 | 198 | 112 | 150 | 555 | 25 | 267 | 314 | 222 | 157 | 11.5 |
| MGFQU 132-32 | 460 | 300 | 215 | 230 | 18 | 12 | 604 | 265 | 260 | 4 | 275 | 238 | 132 | 169 | 643 | 25 | 315 | 366 | 262 | 202 | 14 |

| Motor type | s ₂ S | x ₁ - | y ₁ - | d D | l E | t GA | u F | d ₄ - | h ₂ - | h ₃ - | h ₄ - | k ₁ - | k ₃ - | k ₄ - | p ₆ - | t ₁ - | t ₂ - | t ₃ - | External fan |
|----------------|---------------------|---------------------|---------------------|--------|--------|---------|--------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|--------------|
| MGFQK 063-32** | 11 | 110 | 120 | 19 | 40 | 21.5 | 6 | M6 | 145 | 145 | 94 | 389 | 295 | 213 | 315 | 82 | 111 | 124 | G2E (D) 120 |
| MGFQU 080-22 | 11 | 110 | 120 | 24 | 50 | 27 | 8 | M8 | 160 | 145 | 94 | 413 | 319 | 237 | 339 | 82 | 111 | 124 | G2E (D) 120 |
| MGFQU 100-22 | 14 | 134 | 131 | 28 | 60 | 31 | 8 | M10 | 180 | 145 | 94 | 460 | 366 | 284 | 379 | 82 | 111 | 124 | G2E (D) 120 |
| MGFQK 100-32 | 14 | 134 | 131 | 28 | 60 | 31 | 8 | M10 | 201 | 185 | 94 | 467 | 326 | 219 | 447 | 100 | 97 | 141 | G2E (D) 140 |
| MGFQU 112-22 | 14 | 134 | 131 | 38 | 80 | 41 | 10 | M12 | 213 | 185 | 94 | 602 | 461 | 354 | 451 | 100 | 97 | 141 | G2E (D) 160 |
| MGFQU 132-32 | 14 | 157 | 155 | 38 | 80 | 41 | 10 | M12 | 250 | 185 | 94 | 700 | 542 | 420 | 525 | 92 | 113 | 137 | G2D 180 |

| Motor type | Encoder | | | | | | Brake BFK460-XXX | | |
|---------------|---------|------|-------------|----------|--------|-----------|------------------|-----|-----|
| | without | TD 3 | GT7.08L/420 | Resolver | ITD 21 | FOG9D+GT7 | 08 | 10 | 12 |
| MGFQK 063-22* | 451 | 443 | 459 | 483 | 483 | 572 | 509 | - | - |
| MGFQU 080-22* | 467 | 459 | 475 | 499 | 499 | 588 | - | 555 | 555 |
| MGFQU 100-22* | 520 | 512 | 528 | 552 | 552 | 641 | - | - | 608 |
| MGFQK 100-32* | 520 | 512 | 528 | 552 | 552 | 641 | - | - | 608 |
| MGFQU 112-22* | 660 | 652 | 668 | 692 | 692 | 770 | - | - | - |
| MGFQU 132-32* | 760 | 752 | 768 | 792 | 792 | 870 | - | - | - |

*= Dimension k

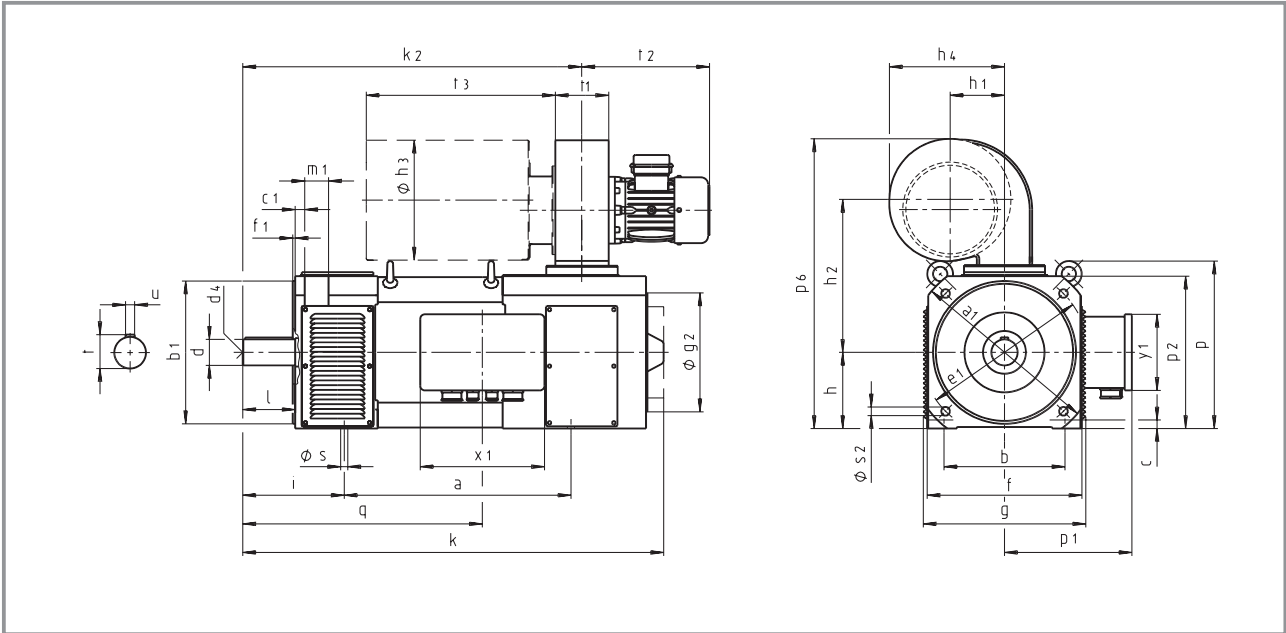


| Motor type | Brake BFK460-XXX | | | | Brake BFK460-XXX + Encoder | | | | |
|---------------|------------------|-----|-----|-----|----------------------------|--------------|----------|--------|-----------|
| | 14 | 16 | 18 | 20 | TD 3 | GTF7.08L/420 | Resolver | ITD 21 | FOG9D+GT7 |
| MGFQK 063-32* | – | – | – | – | 501 | 587 | 541 | 541 | 619 |
| MGFQU 080-22* | – | – | – | – | 547 | 633 | 587 | 587 | 665 |
| MGFQU 100-22* | 608 | – | – | – | 600 | 686 | 640 | 640 | 718 |
| MGFQK 100-32* | 608 | – | – | – | 600 | 686 | 640 | 640 | 718 |
| MGFQU 112-22* | – | 786 | 786 | – | 778 | 864 | 818 | 818 | 896 |
| MGFQU 132-32* | – | – | 886 | 886 | 878 | 964 | 918 | 918 | 996 |

*= Dimension k

MGFQU/MGFQK, IMB35 series

Dimensions



R.H.S. terminal box position (standard)
L.H.S. terminal box position possible
Shaft end to DIN 748T3
Key to DIN 6885, sheet 1
Dimensions to DIN (a, b, c...), IEC (B, A, HA...)

| Motor type | a B | a ₁ P | b A | b ₁ N | c HA | c ₁ LA | e BB | e ₁ M | f AB | f ₁ T | g AC | g ₂ - | h H | i - | k ₂ - | m ₁ - | p - | p ₁ - | p ₂ - | q - | |
|--------------|--------|---------------------|--------|---------------------|---------|----------------------|---------|---------------------|---------|---------------------|---------|---------------------|--------|--------|---------------------|---------------------|--------|---------------------|---------------------|--------|--|
| MGFQU 160-22 | 476 | 400 | 254 | 300 | 18 | 20 | 737 | 350 | 325 | 5 | 342 | 250 | 160 | 213 | 712 | 50 | 355 | 268 | 330 | 503 | |
| MGFQK 160-22 | | | | | | | | | | | | | | | | | | | | | |
| MGFQU 160-32 | 556 | 400 | 254 | 300 | 18 | 20 | 817 | 350 | 325 | 5 | 342 | 250 | 160 | 213 | 792 | 50 | 355 | 268 | 330 | 583 | |
| MGFQK 160-32 | | | | | | | | | | | | | | | | | | | | | |

| Motor type | s K | s ₂ S | x ₁ - | y ₁ - | d D | l E | t GA | u F | d ₄ - | h ₁ - | h ₂ - | h ₃ - | h ₄ - | p ₆ - | t ₁ - | t ₂ - | t ₃ - | External fan | |
|--------------|--------|---------------------|---------------------|---------------------|--------|--------|---------|--------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|--------------|--|
| MGFQU 160-22 | 15 | 18 | 261 | 160 | 55 | 110 | 59 | 16 | M20 | 115 | 299 | 252 | 240 | 606 | 112 | 268 | 392 | DNG6-35/S | |
| MGFQK 160-22 | | | | | | | | | | | | | | | | | | | |
| MGFQU 160-32 | 15 | 18 | 261 | 160 | 55 | 110 | 59 | 16 | M20 | 115 | 299 | 252 | 240 | 606 | 112 | 268 | 392 | DNG6-35/S | |
| MGFQK 160-32 | | | | | | | | | | | | | | | | | | | |

| Motor type | Encoder | | | | | | Brake BFK460-XXX |
|---------------|---------|------|------------|----------|--------|-----------|------------------|
| | without | TD 3 | GT7.08/420 | Resolver | ITD 21 | FOG9D+GT7 | 18 |
| MGFQU 160-22* | 864 | 889 | 905 | 929 | 929 | 1018 | 993 |
| MGFQK 160-22* | | | | | | | |
| MGFQU 160-32* | 944 | 969 | 985 | 1009 | 1009 | 1098 | 1073 |
| MGFQK 160-32* | | | | | | | |

| Motor type | Brake BFK460-XXX | | Brake BFK460-XXX + Encoder | | | | |
|---------------|------------------|------|----------------------------|------------|----------|--------|-----------|
| | 20 | 25 | TD 3 | GT7.08/420 | Resolver | ITD 21 | FOG9D+GT7 |
| MGFQU 160-22* | 993 | 993 | 1018 | 1104 | 1058 | 1058 | 1136 |
| MGFQK 160-22* | | | | | | | |
| MGFQU 160-32* | 1073 | 1073 | 1098 | 1184 | 1138 | 1138 | 1216 |
| MGFQK 160-32* | | | | | | | |

*= Dimension k

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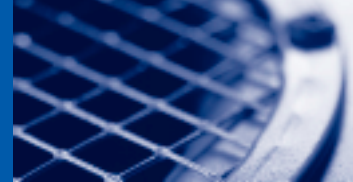
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